



Cairo Governorate



Ministry of State for Environmental Affairs  
Egyptian Environmental Affairs Agency

## **Sustainable Consumption and Production Programme for Cairo City**

Produced with the support of  
United Nations Environment Programme



Prepared by

Egypt National Cleaner Production Centre



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## **List of Abbreviations**

African 10-YFP	African 10 Year Framework Program
AMCEN	The African Ministerial Conference Environment
BOT	Build-Operate and Transfer
CAIP	Cairo Air Improvement Program
CBD	Central Business District
CCBA	Cairo Cleansing and Beautification Authority
CDM	Clean Development Mechanism
CERs	Certified Emissions Reductions
CERUPT	Certified Emission Reduction Unit Procurement Tender
CG	Cairo Governorate
CGTD	Cairo General Traffic Department
ChL	Chemical Leasing
CIDA	Canadian International Development Agency
CMO	Cairo Metro Organization
CNG	Compressed Natural Gas
COPs	Conference of Parties
CP	Cleaner Production
CREATS	Cairo Regional Area Transport Study
CSR	Corporate Social Responsibility
CTA	Cairo Transport Authority
CU	Carbon Unit
DBO	Design-Build-Operate
DNA	Designated National Authority
DOE	Designated Operational Entity
DRTPC	Development Research and Technological Planning Center
EEAA	Egyptian Environmental Affairs Agency
EEPP	Egyptian Environment Policy Program
EIMP	Environmental Information and Monitoring Program
ENCPC	Egypt National Cleaner Production Center
ENIT	Egyptian National Institute for Transport
ENR	Egyptian National Railways
EPAP	Environmental Pollution Abatement Project
ESCOs	Energy Saving Companies
ESDF	Egyptian Social Development Fund
ESTs	Environmentally Sound Technologies
ETTIC	Egypt Technology Transfer and Innovation Center
FEI	Federation of Egyptian Industries
GAFI	General Authority for Investment and Free Zone
GAID	General Authority for Industrial Development
GCBC	Greater Cairo Bus Company
GCR	Greater Cairo Region
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gases
GIS	Geographical Information System
GOPP	General Organization for Physical Planning
GTZ	German Development Agency

HACCP	Hazard Analysis and Critical Control Point
HRT	Heavy Rail Transit
HW	Hazardous Waste
ILO	International Labour Organisation
IMSWM	Integrated Municipal Solid Waste Management
ISO	International Organization for Standardization
JICA	Japanese International Cooperation Agency
KPI	Key performance indicators
LAAP	Local Area Action Plan
LRT	Light Rail Transit
LULUCF	Land Use, Land-Use Change and Forestry
MDGs	Millennium Development Goals
MLV	Maximum Limit Value
MT	Ministry of Transport
MTI	Ministry of Trade and Industry
MOU	Memorandum of Understanding
MSEA	Ministry of State for Environmental Affairs
MSW	Municipal Solid Waste
NAQS	National Air Quality Strategy
NCPC	National Cleaner Production Center
NEAP	National Environmental Action Plan
NEES	National Energy Efficiency Strategy
NEPAD	The New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NMT	Non-Motorized Transport
NP	National Plans
NS	National Strategy
NSDS	National Sustainable Development Strategy
NSISWM	National Strategy for Integrated Solid Waste Management
NSMSWM	National Strategy for Municipal Solid Waste Management
NSS	National Strategy Studies
NSWMP	National Solid Waste Management Program
NUC	New Urban Community
OHSAS	Occupational Health and Safety Assessment Systems
PCF	Prototype Carbon Fund
PPP	Public-Private Partnership
R&D	Research and Development
SA	Standard for Social Accountability
SCP	Sustainable Consumption and Production
SD	Sustainable Development
SEAM	Support for Environmental Assessment and Management
SED	sustainable enterprise development
SIDA	Swedish International Development Agency
SMEs	Small Medium Enterprises
STS	Sustainable Transport Strategy
SWM	Solid Waste Management
TA	Technical Assistance
TP	Transportation Program
TRA	Traditional Residential Areas
TTICs	Technology Transfer and Innovation Centers

UN ECA	United Nation Economic Commission for Africa
UNCED	UN conference on environment and development
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nation Industrial Development Organization
VET	Vehicles' Emission Testing
WB	World Bank



## المخلص التنفيذي

### مقدمه

من خلال البرنامج الإطاري للعشر سنوات لأفريقيا عن الإنتاج والاستهلاك المستدام تم اختيار القاهرة بوصفها مثالاً للمدن الكبيرة بقارة أفريقيا لتعزيز مفهوم الإنتاج والاستهلاك المستدام. من خلال الجهود التشاركية فيما بين مختلف الأطراف المعنية ، قام جهاز شؤون البيئة المصري ؛ ومحافظة القاهرة ؛ والمركز المصري الوطني للإنتاج الأنظف ؛ بتكوين فريق عمل لاعداد وثيقة عن الإنتاج والإستهلاك المستدام لمدينة القاهرة.

حددت محافظة القاهرة - مع غيرها من الأطراف الرئيسية- أربعة مجالات رئيسية، والتي هي من بين اهم المجالات لتحقيق التنمية المستدامة، وتمثل اولويه عالية بالنسبة للمدينة لكي تكون محور لمبادرة الإنتاج والإستهلاك المستدام لمدينة القاهرة. تندرج تلك المجالات ضمن برنامج الأولوية للبرنامج الإطاري للعشر سنوات لأفريقيا ، وهي :

١. ادارة النفايات الصلبه

٢. التنمية الصناعيه

٣. التنمية الحضريه (مع التركيز على العشوائيات)

٤. النقل وانبعاثاته

وثيقة برنامج الإنتاج والاستهلاك المستدام لمدينة القاهرة تم إعدادها تمشياً مع المنهجية العامة التي وضعها برنامج الامم المتحدة للبيئة ، والتي تعتمد على استعراض وتحليل السياسات والاستراتيجيات وخطط العمل والبرامج المتاحة ذات الصلة ، على كل من الإصعدة الوطنية والقطاعية والمحلية. وبالإضافة الى ذلك تم إجراء عدد من المقابلات الرسمية مع الممثلين الرسميين والشركاء المعنيين بالقطاعات الأربعة بالمحافظة. عملية إعداد برنامج الإنتاج والاستهلاك المستدام لمدينة القاهرة قد بني على الأطر السياسية والاستراتيجية القائمة، وتعزيز للجهود الآنية وسد الثغرات (ان وجدت).

### أهداف مبادره/برنامج الإنتاج والاستهلاك المستدام

تتمثل الأهداف الرئيسية لتنفيذ برنامج الإنتاج والاستهلاك المستدام:

• زيادة الوعي باهمية الانتاج والاستهلاك المستدام من خلال الشركاء الرئيسيين المعنيين.

- إعداد برنامجا محليا عن الانتاج والاستهلاك المستدام وتنفيذ عدد من المشاريع التجريبية، عن طريق التشاور مع مختلف الشركاء المعنيين ، مع التركيز على الانشطه الواجبة التطبيق.
- دعم اعداد برنامج وطني لانماط الانتاج والاستهلاك المستدامة.

## نهج البرنامج

اعتمد اعداد وثيقة برنامج الانتاج والاستهلاك المستدام، على نهج منظم متمشيا مع المنهجية العامة للبرنامج الإطاري لأفريقيا. بدأ برنامج الانتاج والاستهلاك المستدام للقاهرة بتحديد ومراجعة أهم السياسات والاستراتيجيات الوطنية ذات الصلة بالتنمية المستدامة وخاصة في ما يتعلق بالمجالات الرئيسية الاربعة. ثم على المستوى المحلي تمت مراجعة بعض الإستراتيجيات؛ البرامج؛ المشاريع المحلية المحددة لإيجاد تصور عن الاحتياجات ذات الاولوية القصوى في المجالات الرئيسية الاربعة. وبمجرد تحديد الاولويات بصورة مبدئية، تم تنسيق لقاءات ثنائية مع الجهات المعنية ذات الصلة لتنقيحها ، والوصول الى اتفاق فيما يتعلق بأهميتها وارتباطها بالسياقات الوطنية والمحلية.

اسلوب التناول المنهجي لإعداد وثيقة برنامج الانتاج والاستهلاك المستدام يمكن استعراضها على النحو التالي :

### ١- السياق الوطني

تم التطرق الى الاسس العامة للسياسات والاستراتيجيات الوطنية المتعلقة بالتنمية المستدامة والانتاج والاستهلاك المستدام لمعالجة سياقات قطاعية محددة ذات صلة ببرنامج الانتاج والاستهلاك المستدام.

ويعد كل من قانون البيئة واللجنة الوطنية للتنمية المستدامة هما الإطاران الوطنيان الرسميان للعمل في مجال التنمية المستدامة،

**فقانون حماية البيئة** قد صدر في عام ١٩٩٤. في وقت لاحق لذلك وفي عام ١٩٩٧ ، انشأت وزارة الدولة لشؤون البيئة والتي ركزت في تعاون وثيق مع الشركاء الوطنيين والدوليين ، على تحديد السياسات البيئية وتحديد الاولويات ، وتنفيذ المبادرات والاتفاقات ضمن سياق التنمية المستدامة.

كما يوجد قانون حماية المستهلك ،الذي اعدته وزارة التجارة والصناعة التي قد شكلت فكرة وجود نظام لحمايه المستهلكين ، عن طريق اصدار قانون حمايه المستهلك رقم ٦٧ للعام ٢٠٠٦ الذي يرمي الى توفير حماية شاملة للمستهلكين والتجار من خلال ضمان التزام واجب الامتثال للقانون . وقد انشأ قانون حماية المستهلك جهاز حماية المستهلك لتنفيذ القانون مع مساعدة من المنظمات غير الحكومية في جميع أنحاء الجمهورية .

هذا وقد تم إصدار عدد أخر من السياسات والقوانين ذات الصلة بالتنمية المستدامة كما ذكر أعلاه ، من قبيل ؛ قانون التخطيط العمراني رقم ٣ لعام ١٩٨٢ ، قانون الري رقم ١٢ لسنة ١٩٨٤ ، وغيرها من القوانين والسياسات ذات الصلة بالتنمية الصناعية ، وتغيرات المناخ واستخدام الطاقة في مشاريع التنمية .

كذلك فى عام ٢٠٠٦ أصدر مجلس الوزراء مرسوما بإنشاء اللجنة الوطنية للتنمية المستدامة تحت قيادة وزارة الدولة لشؤون البيئة ، وعضوية عدد من الوزارات المختلفة. وهذا يعكس التزام الحكومة السياسي في سبيل تحقيق التنمية المستدامة من خلال التكامل والتعاون بين الوزارات المختلفة.

وفي إطار التنمية المستدامة؛ تم أيضا تشكيل اللجنة الوطنية للإنتاج والاستهلاك المستدام بالقاهرة ، طبقا للمرسوم وزارى (٢٦) عام ٢٠٠٨ من اجل إنشاء اللجنة الوطنية ؛ مع قائمة بالأعضاء اللذين يمثلون مختلف الكيانات العاملة في تنفيذ برنامج الإنتاج والاستهلاك المستدام على المستوى المحلى.

في إطار السياق الوطنى تمت مراجعة هذه المستندات الرئيسية والتي تمثل الركيزة الأساسية لأي خطط عمل في مجال التنمية المستدامة في المستقبل :

#### أ. الخطة الوطنية للعمل البيئي (٢٠٠٢-٢٠١٧)

وتعد أهم إطار وطنى للعمل في المجالات الداعمة للإدارة البيئية في مجال التنمية المستدامة. وتم إعدادها من قبل الوحدة - ٢١ بجهاز شؤون البيئة تحت رعاية البرنامج الإنمائي للأمم المتحدة، وتم نشرها في عام ٢٠٠٢. وكان الهدف الرئيسي للخطة هو تقديم الدعم لتبنى مفاهيم التخطيط البيئي التشاركي الباعث للإحتياج المثرى للتنمية المستدامة ، وتعد أساسا لتطوير المبادرات البيئية المحلية.

## ب. جدول اعمال القرن ٢١ والوصف البيئى لمصر

والتي اعتمدت في عام ٢٠٠٢ وفقا لاطار الامم المتحدة. والغرض من الوصف البيئى هو المساعدة في رصد التقدم الذى تحرزته مصر ، وتتبع وتسجيل الاجراءات الوطنية التي اتخذت لتنفيذ الأجندة ٢١. ويقدم خطة عمل شاملة على الصعيدين الوطني والمحلي ، ويتناول مختلف مجالات : مكافحة الفقر ، والديناميكيات الديموغرافية والاستدامة ، وحمايه صحه الانسان ، وادارة الاراضي ، والصناعة والتنمية المستدامة ، وقد تناولت على وجه التحديد مفهوم الانتاج والاستهلاك المستدام من خلال نهج تغيير انماط الاستهلاك والانتاج في مختلف القطاعات. وقد تطرق ايضا الى تعزيز التنمية المستدامة للمستوطنات البشرية ، من خلال برامج واجراءات تهدف الى تحقيق نسيج او هيكل استيطانى متواصل ومتوازن جغرافيا. وعلاوة على ذلك ، فقد تناولت الاستراتيجية الوطنية للصناعة ، من خلال تنفيذ بعض البرامج والمشاريع ، مثل مكافحة التلوث وغيره من القضاء والحد من المواد المستنفده لطبقة الاوزون.

## ج. الاهداف الاتمانيه للألفية فى مصر

أصدرت مصر تقريرين في عام ٢٠٠٤ لمعالجة الخطوات التي اتخذت والاجراءات اللازمة لتحقيق الاهداف الانمائية لللفية. الهدف السابع من الاهداف الثمانية التي حددت في قمة الالفية في عام ٢٠٠٠ ، له اتصال وثيق ومباشر بتحقيق الاستدامة بشكل عام والانتاج والاستهلاك المستدام على وجه الخصوص.

## د. الإطار الوطني لإستراتيجية التنمية المستدامة

صدر في عام ٢٠٠٨ ، ويهدف الى تسهيل عملية المواءمة بين مختلف قطاعات الاقتصاد المجتمع والبيئة ، جنبا الى جنب مع السياسات الحالية وخطط العمل المنفذة في مصر. وقد حدد وقدم المجالات/التحديات الإحدى عشر ذات لاولوية آخذا في الاعتبار الجوانب الاقتصادية والاجتماعية والمؤسسية والبيئية.

## ٢- السياق القطاعي

في هذا القسم ، تم استعراض وتسليط الضوء على اهم الاستراتيجيات والبرامج والخطط والمشاريع المتعلقة بالمجالات الرئيسية الاربعة للإنتاج والإستهلاك المستدام على المستوى

القطاعى. وهذا يعطى الخطوط العريضة والاطر التي من خلالها يجب تنفيذ عدد من الانشطة اسفل كل مجال من تلك المجالات الرئيسية.

### بالنسبة للنفايات الصلبة

فان الوثائق التالية تمت مراجعتها واستخدامها:

١- الإستراتيجية الوطنية للإدارة المتكاملة للمخلفات الصلبة البلدية، والتي صدرت في عام ٢٠٠٠ ، وركزت على النفايات الصلبة البلدية، محددة المجالات الاساسية للمشاكل، والأسباب الجذرية لها، و تقدم تصور او رؤية لحلول ممكنة و متوقعة. وكانت تلك الوثيقة تمثل وثيقة معلومات محددة على المستوى القطاعى وكذلك على المستوى المحلى .

٢- اطار الاستراتيجية الوطنية للتنمية المستدامة قد استخدمت ايضا كمصدر للمعلومات.

### بالنسبة للتنمية الصناعية

فان الوثائق التالية تمت مراجعتها واستخدامها:

١- الإستراتيجية الوطنية للتنمية الصناعية ، والتي اكتملت في شكل مسودة في عام ٢٠٠٨ وتخضع حاليا للمراجعة النهائية تمهيدا لإقرارها والموافقة عليها، وقد وضعت عددا من الاتجاهات ذات الصلة بمبادرة الإنتاج والإستهلاك المستدام.

٢- الإستراتيجية وخطة العمل للإنتاج الأنظف في الصناعة المصرية، والتي وضعت كترجمة واستجابة حقيقية للالتزام السياسى للدولة نحو الإنتاج الأنظف. الا انه على اية حال فان بعض المحاولات والمساعدى السابقة فى هذا الخصوص كانت قد بدأت من قبل جهاز شؤون البيئة لتحديد ووضع استراتيجىة وخطة عمل للإنتاج الأنظف فى مصر. مشروع الحد من التلوث البيئى (EPAP) بجهاز شؤون البيئة كان قد بدأ المرحلة الاولى من الانشطه من اجل تحقيق هذا الهدف ، حيث تمثل تلك الانشطه اطار تنفيذ سياسة الإنتاج الأنظف فى مصر.

٣- المركز الوطنى لنقل التكنولوجيا والابتكار فى الصناعة المصرية (ETTIC) ، الذى يتبع لوزارة التجارة والصناعة التى اتخذت هذه المبادرة لتغطية احتياجات جميع الانشطه الصناعىة فى مصر. ورؤية المركز هو تحقيق النمو الطويل

الأجل. ولذلك، فإن الهدف الرئيسي هو إضافة قيمة عالية، مستدامة وتنافسية لقطاعات التصدير من أجل تحويل مراكز الصناعة في مصر، لتصبح تعتمد على المعرفة.

٤- الإستراتيجية الوطنية لآلية التنمية النظيفة، وذلك كجزء من برنامج الدراسات الإستراتيجية الوطنية، الذي بدأ من حكومة سويسرا والبنك الدولي في عام ١٩٩٧، التي كانت تتم بالتعاون مع وزارة الدولة لشؤون البيئة وجهاز شؤون البيئة. والهدف من هذه الإستراتيجية هو وضع الخيارات والفرص المتاحة للحد من الانبعاثات الغازية من خلال آلية التنمية النظيفة كما في بروتوكول كيوتو. وكذلك تم تشكيل اللجنة الوطنية المعنية بتغير المناخ في عام ١٩٩٧ والسلطة الوطنية المعنية بالية التنمية النظيفة في عام ٢٠٠٥؛ منذ ذلك التاريخ تم تحقيق تقدم ملموس في عدة قطاعات، حيث تمت الموافقة على ٣٦ مشروع ضمن إطار الآلية.

#### بالنسبة للتنمية الحضرية (العشوائيات)

فان الوثائق التالية تمت مراجعتها واستخدامها:

١- البرنامج الوطني لتطوير ورفع مستوى المناطق غير الرسمية (العشوائية) بالمناطق الحضرية، والذي يتناول تعزيز التنمية المستدامة للمستوطنات البشرية. وللبرنامج عدد من الاهداف منها تحقيق التوازن بين السكان والموارد الطبيعية المتاحة لضمان الاستخدام الكفء والأمثل لها، وتحقيق تنمية حضرية واقليمية متوازنة، وتسهيل تحقيق تنمية متوازنة للمناطق المأهولة وغير المأهولة، وانشاء وتطوير قرى جديدة في المناطق الصحراوية لحمايه الاراضي الزراعية. قام البرنامج بمسح لعدد ٢٤ من محافظات الجمهورية لتحديد المناطق غير الرسمية (العشوائية) والتي تحتاج لرفع مستواها او ازلتها كليا.

#### ٢- اطار إستراتيجية الحد من العشوائيات

(لتحسين نوعية الحياة لسكان العشوائيات من خلال التخطيط التشاركي) في عام ٢٠٠٥. وهذا الاطار الاستراتيجي يهدف الى القضاء على المناطق العشوائيه على مستوى الجمهورية، ولكي يتحقق هذا الهدف بنجاح فان الإعتبارات الديموغرافية، والبيئية والاجتماعية والاقتصادية والحضرية يجب ان تؤخذ في الاعتبار اثناء عملية التخطيط لانها تؤثر في اي استراتيجية انمائه للاحياء العشوائية والفقيرة.

#### ٣- اطار الإستراتيجية الوطنية للتنمية المستدامة قد استخدمت ايضا كمصدر

للمعلومات.

## بالنسبة للنقل وانبعاثاته

فان الوثائق التالية تمت مراجعتها واستخدامها:

١- الاستراتيجية الوطنية للتنمية المستدامة الصادرة في عام ٢٠٠٨ وقد ركزت على بعض القضايا الرئيسية لتحسين قطاع النقل في البلاد والتي تتماشى مع التوجهات السياسية العامة لتخفيض الانبعاثات ، وحل مشكلة الازدحام، والتحرك قدما نحو تحقيق نمط الاستهلاك المستدام في هذا القطاع الخدمي الهام.

٢- الاستراتيجية الوطنية لنوعية الهواء، قطاع النقل يساهم بقدر كبير في مشاكل تلك الهواء بمصر، والخطة الوطنية للعمل البيئي في عام ٢٠٠٢ أوصت بعدد من الاجراءات السياسية والإستثمارية الرامية الى تحسين رداءة نوعية الهواء. قام جهاز شؤون البيئة بوضع استراتيجية لادارة نوعية الهواء في مصر والتي تمت الموافقة عليها من قبل مجلس ادارته في عام ٢٠٠٢. ذكرت الاستراتيجية القطاعات الاكثر تلويثا للبيئة كالطاقة والنقل والصناعة والزراعة مع تحديد عدد من الاجراءات المقترحة لكل واحد على حدة. الهدف الأسمى للاستراتيجية الوطنية لنوعية الهواء (NAQS) هو تقليل معدلات تلوث الهواء الى حد كبير في كثير من المناطق الحضرية في مصر ، وبالتالي تحسين الظروف المعيشية والرعاية الاجتماعية للسكان المتضررين والإقلال من الاعباء الاقتصادية التي يفرضها تلوث الهواء على المجتمع.

٣- برنامج المعلومات والرصد البيئي (EIMP) ، والذي تأسس في عام ١٩٩٦

ويهدف الى انشاء برنامج وطني للرصد البيئي للبيئة الهوائية المحيطة والمياه الساحلية.

٤- وثيقة البنك الدولي بعنوان التحليل البيئي بمصر والتي تطرقت الى بعض الإتجاهات فيما يتعلق بمشاكل النقل في القاهرة.

٥- الشراكة بين القطاعين العام والخاص في قطاع النقل والتي اصدرتها وزارة النقل بالتعاون مع غرفة التجارة الامريكية.

## ٣- السياق المحلي

في هذا القسم ، تم استعراض وتسليط الضوء على اهم الاستراتيجيات والبرامج والخطط والمشاريع المتعلقة بالمجالات الرئيسية الاربعة للإنتاج والإستهلاك المستدام على الصعيد المحلي (المحافظة / المدينة). وهذا يعطي الخطوط العريضة والاطر التي من خلالها يجب تنفيذ عدد من الانشطة اسفل كل مجال من تلك المجالات الرئيسية:

## بالنسبة لإدارة النفايات الصلبة البلدية

فان الوثائق التالية تمت مراجعتها واستخدامها:

- ١- الإستراتيجية الوطنية للإدارة المتكاملة للمخلفات الصلبة البلدية، مع التركيز على الأدوار والمسؤوليات المحلية على مستوى المحافظات .
- ٢- وثائق خاصة من هيئة نظافة وتجميل القاهرة، وجهاز شؤون البيئة.

## بالنسبة للتنمية الصناعية

فان الوثائق التالية تمت مراجعتها واستخدامها:

- ١- مسودة المخطط العام لإستراتيجية التنمية الحضرية فى إطار التنمية المستدامة لإقليم القاهرة الكبرى والتي اعدتها الهيئة العامة للتخطيط العمراني بالتعاون مع الوكالة اليابانية للتعاون الدولي بالشراكة مع السلطات المحلية بمحافظة القاهرة ، والتي تناولت التنمية الصناعية على وجه التحديد من بين عناصر اخرى.
- ٢- خطة محافظة القاهرة لنقل وإعادة توطين الصناعات الملوثة.
- ٣- الاستراتيجيه الوطنية للتنمية الصناعية، مع التركيز على المستوى المحلي (المحافظة).

## بالنسبة للتنمية الحضرية (العشوائيات)

فان الوثائق التالية تمت مراجعتها واستخدامها:

- ١- برنامج حصر و تحريم المناطق العشوائية بأطراف القاهرة الكبرى (هيئة العامة للتخطيط العمراني)؛
- ٢- برنامج التنمية الحضرية(محافظة القاهرة).

## بالنسبة للنقل وانبعاثاته

فان الوثائق التالية تمت مراجعتها واستخدامها:

- ١- دراسة النقل بإقليم القاهرة الكبرى (CREATS) والتي اعدتها وزارة النقل بالتعاون مع الوكالة اليابانية للتعاون الدولي. انها مخطط عام للنقل في القاهرة الكبرى اعدت في تشرين الثاني / نوفمبر عام ٢٠٠٢ ، وهي تسلط الضوء على أهمية تخفيف الضغط عن المناطق الوسطى والسماح بايجاد بعض الانشطة الاجتماعية والاقتصادية في بعض المناطق الاخرى الجديدة. و هى ايضا تقترح توفير نظام للنقل العام



- الاعتماد يمكن الإعتماد عليه في بعض المناطق في البلاد ، ورفع مستوى نظام السكك الحديدية القائمة في الضواحي ، وتطوير نظام النقل العام جملةً.
- ٢- مشروع تحسين هواء القاهرة (CAIP) ، تطرق الى مجالات مختلفة لقياس انبعاثات المركبات، والتوافق ، واصدار الشهادات ، وكذلك تحسين كفاءه الوقود والحد من انبعاثات عوادم السيارات التي تعمل بالجازولين.
- ٣- وثيقة البنك الدولي بعنوان التحليل البيئي بمصر ؛
- ٤ - ووثيقة برنامج الامم المتحدة الانمائي لنقل المستدام في مصر، مع بعض المعلومات المحددة على المستوى المحلي.

#### ٤- تحليل المجالات الرئيسية

تم تحليل دقيق لكل مجال من المجالات الموضوعية الرئيسية المختارة لتحديد المشاكل والتحديات ، وتحديد اولويات للعمل. نتائج هذا التحليل المفصل قد كشف عن ما يلي :

بالنسبة للمخلفات الصلبة :

تولد المخلفات الصلبة البلدية يتزايد بشكل مطرد مع تزايد نسبة التحضر ، وتركز السكان والتنمية الاقتصادية والصناعية في اقليم القاهرة الكبرى. تنتج القاهرة وحدها حوالى ١٠٠٠٠ طن / يوم من المخلفات الصلبة. من هذه الكمية ، يتم جمع ٧٠٠٠ طن فقط (٧٠ %) ؛ وتترك ٣٠٠٠ طن لتتراكم في الشوارع أو تحرق حرق مكشوف بتأثيرات واضحة على نوعية الهواء وصحة الانسان. حتى خريف عام ١٩٩٨ ، لم يكن لدى مصر استراتيجية وطنية لادارة المخلفات الصلبة ، ولقد أدى ذلك الى عرقلة اي جهود نحو اعتماد اي استراتيجيات محلية من قبل المحافظات. ولقد اعتمدت المحافظات المحلية على الإعتمادات المالية العامة الشحيحة لتحسين مختلف عناصر المنظومة في نطاقهم المحلي. تحليل المنظومة الحالية لإدارة المخلفات الصلبة البلدية فى القاهرة قد كشفت عن وجود عدد من المعوقات / التحديات والتي يمكن وضع عدد من الاجراءات ذات الاولوية للتغلب عليها:

#### التحديات :

- ١- عدم كفاءه النظام الحالي.
- ٢- عدم وجود مبادرات او اطروحات لمعالجة الحد من المخلفات والفصل عند المصدر.
- ٣- عف التكامل والتنسيق بين مختلف الأطراف المعنية.

- ٤- ضعف إعمال القانون.
- ٥- عدم كفاية التمويل المناسب.
- ٦- عدم كفاية الخبرات المدربة والمؤهلة لإدارة وتشغيل النظام.
- ٧- عدم كفاية البنى التحتية المكمله.
- ٨- ضعف الوعي البيئي العام.

### اولويات العمل :

- ١- زيادة كفاءه خدمات الجمع والنقل.
- ٢- إعمال بعض المبادرات او الإطروحات الجديدة للحد من تولد المخلفات والفصل عند المصدر.
- ٣- اعادة تأهيل مواقع دفن المخلفات.
- ٤- انشاء محطات وسيطة.
- ٥- برامج بناء القدرات.
- ٦- برامج زيادة التوعيه.

### بالنسبة للتنمية الصناعية

التنمية الصناعية كانت على الدوام التوجه الرئيسي لمحافظة القاهرة ، واقليم القاهرة الكبرى بشكل كبير. القاهرة تعتبر واحدة من كبرى المدن الصناعية في مصر لانها تتضمن عددا كبيرا من التجمعات الصناعية ، وتجيش بعدد من الانشطه الصناعية التي لها الدور الريادي من بين الانشطه الاخرى في توفير فرص عمل وفى تحقيق النمو الاقتصادي. تساهم محافظة القاهرة بشكل كبير فى المحرك الاقتصادي للامة. حصتها من الاقتصاد الوطني (الناتج المحلي الاجمالي) كانت ٣١ في المائة فى عام ٢٠٠٦. جنبا الى جنب مع التنمية الصناعية يظهر التلوث وغيره من المشاكل البيئية والتي -على ما يبدو- ولا تزال تشكل تحديا للمحافظة. بالاضافة الى ذلك ، فان مشكلات استخدام الاراضي؛ بالأساس فيما يتعلق باختلاط الأنشطة السكنيه والصناعية مختلفة الاحجام ؛ تلقى بظلالها على الوضع الحالى.

تحليل الوضع الأنى للتنمية الصناعية فى القاهرة قد كشف عن وجود عدد من المعوقات / التحديات والتي يمكن وضع عدد من الاجراءات ذات الاولوية للتغلب عليها:

## التحديات :

- ١- صعوبة وارتفاع تكاليف نقل وإعادة توطين الصناعات كبيرة الحجم.
- ٢- عدم قدرة بعض المنشآت الصناعية القديمة للامتثال للمعايير والسياسات البيئية.
- ٣- عدم كفاية الأراضي المناسبة لنقل وإعادة توطين الانشطة الصناعية المسببه للتلوث ، اضافة الى صعوبات في الحصول على الموافقات اللازمة.
- ٤- الإنتشار العشوائى للصناعات الصغيرة والمتوسطة الحجم المسببة للتلوث داخل المناطق السكنيه.
- ٥- المشاكل التي تواجه الصناعات القائمة فى تبنى مفاهيم الانتاج الانظف.
- ٦- عدم توافر نظام ادارة متكامل للمخلفات الخطرة في القاهرة.

## اولويات العمل :

- ١- التحكم فى التلوث الصناعى من خلال تشجيع تكنولوجيات الانتاج الانظف.
- ٢- تحديد مصادر التلوث للمنشآت الصناعية لخطه النقل واعادة التوطين.
- ٣- توفير الأراضي اللازمة لنقل واعادة توطين الصناعات الصغيرة والمتوسطة.
- ٤- دعم الجهود و التنسيق بين الجهات المعنية بشأن توفير الأراضي.
- ٥- توفير الأراضي اللازمة لنقل و إعادة توطين الصناعات الملوثة.
- ٦- يتم العمل في ضوء المخططات العمرانية لتنمية المناطق و بالتكامل معها.

## بالنسبة للتنمية الحضريه (العشوائيات) :

بالنسبة لمحافظة القاهرة ، فان عدد المناطق العشوائية القائمة تصل الى ٨١ منطقة ؛ والتي نمت على الاراضي المملوكة للدولة ، بمساحة اجمالية تبلغ ٢٦٧٠ فداناً. من اجمالى هذه المناطق فان ٦٨ منطقة على مساحة اجمالية تبلغ ٢٥٠٠ فداناً ، يجرى حالياً ترميمها ، و عدد آخر من المناطق العشوائية يبلغ ١٣ منطقة على مساحة اجمالية تبلغ ١٧٠ فداناً ، والتي في حاجة ماسة الى ازالتها بالكامل واعادة تخطيطها. ضمن اطار البرنامج الوطني لتطوير ورفع مستوى المناطق غير الرسمية داخل المناطق الحضريه ومن اجل تحقيق الاستدامه في قطاع التنمية الحضريه ، فان محافظة القاهرة كانت قد اطلقت مشروع لتخطيط وتطوير لبعض المناطق العشوائية. والهدف من هذا المشروع التجريبي هو إعادة تأهيل المستوطنات غير الرسمية لمنشأة ناصر (الواقعة شرق القاهرة) والتي تعتبر واحدة من اكثر المناطق تدهورا وكثافة بالسكان (٤٠٠ نسمة / فدان) ، ويقطنها حوالى (٣٥٠ ٠٠٠ نسمة).

لتعزيز الجهود الرامية الى ايجاد حل لمشكلة عشوائيات الحضر ، وبالتعاون الوثيق مع الإطار الإستراتيجي لتنمية والقضاء على العشوائيات ، فان محافظة القاهرة تعمل حاليا في اثنين من البرامج الأخرى : برنامج احتواء العشوائيات في القاهرة الكبرى ، وبرنامج التنمية الحضرية . أولويات التنمية للمناطق العشوائية توضع وفقا لخصائص كل منطقة على حدة ؛ على سبيل المثال تعداد السكان ، المساحة، مستوى التدهور في تلك المناطق الحضرية ، معدل النمو ، موقع المنطقة العشوائية والقيمة الإقتصادية للأراضي.

وبهدف الحد من الامتدادات العشوائية أو ظهور مناطق جديدة، تقوم وزارة الإسكان و المرافق و التنمية العمرانية من خلال الهيئة العامة للتخطيط العمرانى وبمشاركة محافظة القاهرة وأجهزتها المعنية بإعداد مشروع "حصر وتحريم المناطق العشوائية بأطراف القاهرة الكبرى كأحد المشروعات الرامية لتوفير الخدمات لتلك المناطق والحد من امتداداتها الغير مرشدة مما سيؤدى إلى تحسين ظروفها المعيشية

#### التحديات :

- ١- عدم وجود معلومات دقيقة ومنتظمة عن المناطق العشوائية واحتياجاتها.
- ٢- محدودية الوصول الى الخدمات والبنى التحتية وظهور مشكلة الحصول على الخدمات العامة بطريقة غير مشروعة.
- ٣- زيادة عدد المباني الرثة ، كنتيجة لعدم وضوح الملكية.
- ٤- الاعتماد على القطاع الاقتصادي غير الرسمي لمساندة النشاط التجاري ومكافحة البطالة. هذا القطاع غير الرسمي لديه صعوبات في الوصول الى الأسواق التجارية ، ويحتاج لتغيير الى القطاع الرسمي من اجل توفير شبكات الامان الاجتماعى ، وتنمية الموارد البشرية والتصدي للقضايا البيئية.
- ٥- عوائق مؤسسية ومالية ، حيث انه هناك فارق ملحوظ بين المشاريع المخططة ، وتلك التي تمت الموافقة عليها و الاستثمارات الفعلية المنفذة.
- ٦- عدم كفاية وملاءمة الاطار القانوني للقضاء على وجود وظهور العشوائيات.
- ٧- عدم كفاية تنفيذ بعض السياسات (مثل اضافة رسوم جمع المخلفات الصلبه الى فواتير الكهرباء) على الرغم من ان بعض هذه العشوائيات لا تحصل على الخدمة مطلقا.
- ٨- قلة الوعي البيئي.

## اولويات العمل :

- ١- أعمال واناذا السياسات/ الاليات القائمة التي تحول دون انشاء مناطق عشوائية جديدة.
- ٢- أنشاء قاعدة بيانات متكاملة عن المناطق العشوائية لاغراض التخطيط (يتم تنفيذها حاليا).
- ٣- زيادة التنسيق فيما بين مختلف الاطراف المشاركة في تطوير المناطق العشوائية (يتم تنفيذها حاليا).
- ٤- التركيز على تفعيل وتمكين المجتمعات المحلية وتشجيع الأنشطة الذاتية (مبادرات المجتمع المحلي).
- ٥- توفير وزيادة فرص الوصول الى البنية التحتية والخدمات.
- ٦- تمكين تملك الأراضي وتسجيل الممتلكات.

## بالنسبة للنقل وانبعاثاته

مشكلة النقل في القاهرة لها وجه مزدوج في زيادة احمال الانبعاثات من المرور الى ابعد من الحدود المسموح بها المنصوص عليها في القانون ، والزياذه في زمن الرحلة التي تقطعها المركبات نظرا لازدحام الطريق ، وكلاهما على حد سواء يسببان خسارة محتملة في الاقتصاد الوطني ، سواء بصورة مباشرة او غير مباشرة. على وجه العموم ، فان القاهرة تعاني من صعوبات متأصلة في نقل الاشخاص وتدفق حركة المرور ؛ وهذا الأمر بسبب الزياذه الكبيرة وغير المتوقعة في أعداد المركبات من مختلف الانواع. احدى الاولويات الرئيسية لقطاع النقل في القاهرة هي تحسين القدرة على التخطيط لخلق نظام فعال ؛ مناسب في تكلفه من خلال تمكين الجهات الحكوميه المحلية المسؤولة عن الاشراف على النقل والتخطيط من تنفيذ دورها.

مشاكل النقل في القاهرة لها جوانب مختلفة ، فهي تشمل ؛ مشاكل المرور ، مشاكل النقل الجماعي ، مشاكل انتظار السيارات - وفي بعض ان لم يكن كل هذه المشاكل ، فهناك دوما بعداً من التلوث يؤدي الى تفاقم تلك المشاكل ويشكل خطراً حقيقياً على الصحة العامة و/ أو البيئة. تطور قطاع النقل في اقليم القاهرة الكبرى على مدى العقود الثلاثة الماضية أظهر زيادة في استخدام سيارات الركوب (بما فيها سيارات الاجره) ، والتي تشكل حالياً اكثر من ربع بالمائة (٢٥ ٪) من سوق الرحلات باستخدام المحركات. بعض اشكال وسائل النقل العام ، ولا سيما خدمات الحافلات

العامة والسكك الحديدية الخفيفه ، تعاني من تراجع مواز في المفاضلة. سيارات الاجره المشتركة ، من ناحية اخرى ، قد زادت حصتها زيادة كبيرة في سوق النقل.

#### التحديات :

- ١- عدم كفاءه نظام النقل العام.
- ٢- عدم كفاية البنية التحتية للطرق لتماشى الزيادة المطردة في أعداد وسائل ووسائط النقل.
- ٣- عدم كفاءه تكامل مختلف وسائط النقل.
- ٤- محدوديه الوصول الى آليات التمويل.
- ٥- عدم كفاءه التنسيق بين القطاعى فيما بين مختلف الاطراف المعنية في قطاع النقل.
- ٦- عدم وجود مستوى كاف من الوعي العام.

#### اولويات العمل :

- ١- زيادة كفاءه نظام النقل العام.
  - ٢- شجيع الناس على استخدام اكثر لوسائل النقل العام والإعتماد بشكل اقل على السيارات الخاصة.
  - ٣- تشجيع استخدام الحلول والتكنولوجيات السليمه بيئيا.
  - ٤- وضع برامج تجريبية لتغيير السلوك.
  - ٥- استخدام اساليب تكنولوجيه متقدمة في حل مشاكل اختناقات المرور.
- كلما نمت المدينة ، وخاصة عندما تصبح أكثر استقرارا من الناحية الاقتصادية ، فان أساطيل المركبات سوف تنمو بسرعة أكبر من الحيز المتاح للطرق. وزيادة الإختناقات في حركة المرور (والتلوث) سوف تتفاقم. وستكون المشاكل بالأساس " اختناقات مرورية مزمنة " ؛ مع عدم كفاية حيز الطرق لتلبية الطلبات المتلاحقة من المركبات الخاصة ، ووسائل النقل العام ، والمركبات التجارية ، ووسائل النقل الخفيف (غير المزوده بمحركات) والمشاة.

#### - المشروعات المقترحة ذات الاولوية

واعتمادا على نتائج التحليل للمجالات الرئيسية الأربع والتي اجريت فى الدراسة ، فانه قد تم اقتراح عددا من المشاريع التجريبية فى كل مجال على حدة وبمشاورات

- مكتفة مع السلطات المحلية في المدينة تم اختيار ثلاث مشروعات ، تمثل اولوية للمحافظة في سبيل الوصول الى مدينة مستدامه، تلك المشروعات هي:-
- ١- الفصل من المنبع في احد الأحياء- وذلك بهدف زيادة كفاءة اعادة التدوير .
  - ٢- الإدارة المتكاملة للمخلفات الصناعية بمنطقة مشية السد- حيث تشمل كذلك ادارة للمخلفات الصناعية الخطرة بالمنطقة.
  - ٣- مسار أولوية للأتوبيس بشارع بورسعيد- بهدف تحسين كفاءة المرور بهذا الشارع وتشجيع استخدام وسائل النقل العام وتحسين نوعية الهواء.

#### - الخلاصة والتوصيات

هناك حاجة لإجراء المزيد من الدراسات المفصلة التي يتعين تنفيذها في العديد من المجالات الأخرى ذات العلاقة بالإنتاج والاستهلاك المستدام غير المجالات المختارة في هذا التقرير فيما يتعلق بتطبيق أنماط الاستهلاك والإنتاج المستدامة ، وإعطاء صفة الدوام الوطنية الحالية للإنتاج والاستهلاك المستدام من اجل وضع السياسات ؛وكذلك الاضطلاع بأنشطة على المستوى الوطني هي مسألة هامة يتعين اتخاذها في الاعتبار. أما بالنسبة إلى المجالات الأربعة ذات الأولوية بالتقرير، فقد تم الخروج بعدد من التوصيات من اجل إعطاء مبادئ توجيهية لتحسين العمل المستقبلي في كل قطاع.

#### - نظرة إلى الأمام

بالنظر إلى المستقبل ، فإن الضغوط البيئية وسوف تزداد مع نمو الاقتصاد والتغيرات السريعة في أسلوب الحياة ، ولا سيما في المناطق الحضرية. ونتيجة لذلك ، فإن هناك ثمة حاجة إلى سياسات لإعطاء المستهلكين حافز لمزيد من التحرك نحو الأنماط المستدامة للاستهلاك. كما انه يتعين تبني مبادرات وطنية تركز على النمو الاقتصادي والتغيير الاجتماعي الذي يهدف إلى تحسين نوعية الحياة ، مع الأخذ في الحسبان الآثار البيئية السلبية الممكنة. إن أحد أهم أدوار اللجنة الوطنية الدائمة للإنتاج والاستهلاك المستدام المقترحة هو تنفيذ تلك المبادرات وتعزيز ونشر المزيد من تلك المفاهيم في المدن والمحافظات الأخرى.

## **Executive Summary**

### **Introduction**

Within the framework of the African 10 year program on sustainable consumption and production, Cairo has been selected as an example of a mega city in Africa for promotion of sustainable consumption and production. Through a cooperative efforts among different concerned parties, the Egyptian Environmental Affairs Agency; EEAA, Cairo Governorate; CG and the Egyptian National Cleaner Production Center; ENCPC have created a working team to prepare an SCP program document for Cairo.

The Governorate of Cairo-with other key parties-has defined FOUR thematic areas, which are among the most important areas for sustainable development, and representing high priority for the city to be a focus for the SCP Cairo initiative. Those areas fall within the 10-year African framework priority program, they are:

1. Solid Waste Management
2. Industrial Development
3. Urban Development (with focus on slums areas)
4. Transportation and its Emissions

The SCP program document for Cairo was prepared following the general methodology formulated by UNEP, which based on reviewing and analyzing relevant, available policies, strategies, action plans and programs on the national, sectoral and local levels. In addition to this a number of formal interviews had been conducted with official representatives, and stakeholders. The process of developing the SCP program for Cairo had built on existing political/strategic frameworks, enhancing ongoing efforts and bridge gaps (if any).

### **Objective of SCP initiative/program**

The main objectives of implementing an SCP program are to:

- Raise awareness by the importance of the sustainable consumption and production through key partners involved.
- Prepare a local program for SCP and implementing a number of pilot projects, through consultation with different stakeholders, focusing on the applicable activities.
- Support the preparation of a national program for sustainable consumption and production.

### **Program approach**

The pursuant approach in preparation of the SCP program document has based on a systematic approach following the general methodology of the African 10 Year Program Process. The SCP Program for Cairo started with the identification and revision of the main National policies and strategies relevant to sustainable development and especially in relation to the four thematic areas. Then on the local level revision of some specific local strategies; programs or projects had also been carried out to conceptualize high priority needs in the four thematic areas. Once priorities have been preliminarily identified, bilateral meetings with related stakeholders were organized to refine them, and arrive at a consensus as to their importance and relation to national and local contexts.



The systematic approach for preparation of the SCP program document could be highlighted as follows:-

### **1- The National Context**

The general foundations for Egypt's policies and strategies regarding SD and SCP have been touched upon for addressing specific sectoral contexts relevant to the SCP Program. In the national context the following key document has been thoroughly revised that represent the mainstay for any sustainable development action plans in the future:

#### **a. Policies**

##### **A.1 Environmental Law**

The first law for the protection of the environment has been issued in 1994. Later after in 1997, the Ministry of State for Environmental Affairs (MSEA) was created, which focused, in close collaboration with national and international partners, on defining environmental policies, setting priorities, implementing initiatives/agreements within the context of SD.

##### **A.2 Consumer Protection Law**

The Ministry of Trade and Industry have formed the idea of having a system to protect consumers, by enacting the consumer protection law number 67 of 2006; which was designed to provide comprehensive protection to consumers by ensuring traders' commitment and obligation to comply with the law. The Law has created the Consumer Protection Agency for the implementation of the law with the help of the Consumer NGOs all over the nation.

Other laws and policies have been issued in relevance to Sustainable Development (SD) as mentioned above, such as; the urban planning law number 3 of 1982, Irrigation law number 12 of 1984, and other laws and policies related to the industrial development, climate changes and usage of energy in the development projects.

#### **b. National Commission on Sustainable Development**

In 2006, the Cabinet of Ministries had issued a decree establishing the National Commission on Sustainable Development under the leadership of the MSEA, and with membership of a number of different line ministries. This reflected the government political commitment towards achieving sustainable development through integration and co-operation among different ministries.

#### **c. National Steering Committee for the Preparation of the SCP Program in Cairo**

As a final step for the implementation of the SCP program for Cairo, a Ministerial Decree (26) for the establishment of the Steering Committee was issued in 2008; with a list of members from different entities working in the implementation of SCP program on the local level.

#### **d. The National Environmental Action Plan (NEAP; 2002-2017)**

It is the main national framework for action supporting environmental management for sustainable development. It had been prepared by the capacity-21 unit at EEAA under the auspices of the United Nations Development Program (UNDP), and has

been published in the year 2002. Its primary goal is to provide support for the introduction of participatory and demand-driven environmental planning, favored for sustainable development, and was considered as the basis for development of local environmental initiatives.

**e. Agenda 21 and Egypt's country Profile**

That was adopted in 2002 according to the UN context. The purpose of the profile is to help in monitoring the country's own progress, track and record the national actions undertaken to implement the agenda. It delivers a comprehensive plan of action on both national and local levels, and dealing with different areas of: combating poverty, demographic dynamic and sustainability, protecting human health, land management, industry and sustainable development, it had specifically dealt with the concept of SCP through its approach of *changing consumption patterns in different sectors*. It had also dealt with promoting *sustainable human settlement development*, through programs and actions aiming to achieve geographically balanced and sustained settlement structure. Moreover it had dealt with the *national strategy for industry*, through implementing of some programs and projects, like the one for Pollution Abatement; and the other one on elimination and reduction of ozone depleting substances.

**f. Millennium Development Goals for Egypt (MDGs)**

The country has published two reports in 2004 addressing the steps taken and the actions needed for achieving the Millennium development goals. The seventh goal of the eight goals identified in the Millennium Summit in 2000, has strong relevance and direct implication towards sustainability in general and SCP in particular.

**g. National Sustainable Development Framework Strategy**

Issued in 2008, and aimed at facilitating the process of harmonizing various sectors of economy, social and environmental, together with the current policies and action plans operating in the country. It had identified and presented its 11 priority areas/challenges taking into consideration the economical, social, institutional and environmental aspects.

**2- Sectoral Context**

In this section, the main strategies, programs, plans and projects relating to the four thematic areas of the SCP program at a sectoral level were highlighted. This gives the outlines and frameworks within which activities under each and every thematic area are to be carried out.

**For Solid Waste**, the following sets of documents have been revised and used in this context:

- 1- **The National Strategy for Integrated Municipal Solid Waste Management**, issued in 2000, and focused on Municipal Solid Waste (MSW), identifying core problem areas, root cause(s), and conceptualizing a vision for possible and foreseeable solutions. This had represented specific information document for sectoral as well as the up-coming local level(s).
- 2- **The Framework for the National Sustainable Development Strategy** has also been used as a source of information.

**For Industrial Development**, the following sets of documents have been revised and used in this context:

- 1- **The National Strategy for Industrial Development**, completed in a draft form in 2008 and currently being under final revision and approval had set out a number of directions relevant to the SCP initiative.
- 2- **The Strategy and Action Plan for Cleaner Production in Egyptian Industry**, which was developed as a translation of the country's political commitment towards Cleaner Production (CP). However some early endeavors had been initiated by EEAA to set forth and develop a Strategy and Action Plan for CP in Egypt. The Environmental Pollution Abatement Project (EPAP) of EEAA had initiated a first phase of the activities towards this goal, where such activities have represented the framework for CP implementation in Egypt. The strategy published in May 2004; aimed at developing an integrated framework for implementation of CP in the Egyptian industry.
- 3- **Egyptian National Program on Technology Transfer and Innovation Center (ETTICs)**, which was undertaken by the Ministry of Trade and Industry (MTI) whom took this strategic initiative to cover the needs of all industrial activities in Egypt. The vision of ETTIC is to achieve long-run growth is due to technological innovation. Therefore, the vision of Egypt Technology Transfer and Innovation centers is to transform the Egyptian Industry and Export sectors to become knowledge based, high value added, sustainable and competitive sectors.
- 4- **Egypt's National Strategy Study on the Clean Development Mechanism**, as a part of the National Strategy Studies (NSS) Program, launched by the Government of Switzerland and the World Bank in 1997, which was undertaken in collaboration with the Ministry of State for Environmental Affairs and Egyptian Environmental Affairs Agency (EEAA). The objective of the NSS is to develop options and opportunities for GHG offsets through the Clean Development Mechanism (CDM) of the Kyoto Protocol. The National Committee on Climate Change was formed in 1997 and the Egyptian Designated National Authority for Clean Development Mechanism (DNA-CDM) in 2005; achieving tangible progress in several sectors, where (36) projects have been approved within the framework of the Mechanism.

**For Urban Development (slum areas)**, the following sets of documents have been revised and used in this context:

- 1- **The National Program for Upgrading and Development of Informal Areas (slums) in Urban Areas**, dealing with Promotion of sustainable human settlements. The program had a number of objectives of achieving a balance between population and existing natural resources to ensure their efficient utilization, achieving a balanced regional and urban development, facilitating a balanced development of habitable and non-habitable areas, developing new towns in desert areas to protect agricultural land areas. The program has surveyed 24 governorates to identify the informal areas needed to be upgraded or totally removed.
- 2- **The Framework Strategy for the Development and Elimination of Slums** (to Enhance life quality for slum dwellers through participatory planning) in 2005. This framework strategy aims to eliminate the existence of slums nationwide, as in order for the above goal to be successfully achieved, the demography, environmental, social, economical and urban aspects must be

taken in consideration during the planning process as they affects any development strategy for slums.

- 3- **The Framework for the National Sustainable Development Strategy** has also been used as a source of information.

**For Transportation and its Emissions**, the following sets of documents have been revised and used in this context:

- 1- **The National Sustainable Development Strategy (NSDS)** issued in 2008 had focused on some key issues for improvement of transportation sector in the country that are in line with the general, overall policy directives of reducing emissions, solving the problem of congestion, and moving ahead towards sustainable consumption pattern in this critical service sector.
- 2- **The National Air Quality Strategy**, as transportation is contributing by a considerable share in the national air pollution problems, the NEAP of 2002 recommended a series of policy and investment actions to improve poor air quality. The EEAA has formulated a strategy on air quality management in Egypt which was endorsed by its Board of Directors in 2002. The strategy mentioned the most polluting sectors as energy, transport, industry, agriculture with proposed actions for each one. The ultimate objective of the National Air Quality Strategy (NAQS) is to significantly reduce the levels of air pollution suffered in many urban areas in Egypt, thereby improving the living conditions and welfare of the affected populations and reducing economic burden imposed by air pollution on the nation.
- 3- **The Environmental Information and Monitoring Program (EIMP)**, founded in 1996 and aimed at establishing a national environmental monitoring program for ambient air and coastal waters.
- 4- **A World Bank** document, entitled country environmental analysis which has touched some areas regarding transportation problems in Cairo.
- 5- **A special document** entitled Public-Private Partnership in transport sector issued by the Ministry of Transport in collaboration with the American Chamber of Commerce.

### **3- Local Context**

In this section, the main strategies, programs, plans and projects relating to the four thematic areas of the SCP program at a local (governorate/city) level were highlighted. This gives the outlines and frameworks within which activities under each and every thematic area are to be carried out.

#### **For Municipal Solid Waste Management**

A number of enabling documents have been revised and used in this context:

- 1- **The National Strategy for Integrated Municipal Solid Waste Management**, focusing on roles and responsibilities on the local Governorate level.
- 2- **Special documents** from Cairo Cleansing and Beautification Authority (CCBA), and EEAA.

**For Industrial Development**, the following sets of documents have been revised and used in this context:

- 1- A draft **Strategic Urban Development Master Plan for Sustainable Development of Greater Cairo Region** prepared by the Japanese

International Cooperation Agency-JICA and the local authorities in Cairo, that addressed industrial development specifically; among other components.

- 2- **Cairo Governorate's plan for relocating polluting industries.**
- 3- **The National Strategy for Industrial Development**, focusing on local (Governorate) level.

**For Urban Development (Slums)**, the following sets of documents have been revised and used in this context:

- 1- **The Containment of Greater Cairo slums;**
- 2- **The Urban Development Program.**

**For Transportation and its Emissions**, the following sets of documents have been revised and used in this context:

- 1- **Cairo Regional Area Transportation Study (CREATS)**, prepared by the Japanese International Cooperation Agency-JICA. It is a master plan for transportation in greater Cairo region prepared in November 2002, addressing the importance to relieve pressure from central areas and allowing for creation of some socioeconomic activities in some other new areas. It also proposes to provide a reliable public transport system in some areas of the country, upgrading the existing suburban rail system, and developing a public transport system.
- 2- **Cairo Air Improvement Project (CAIP)**, touched upon different areas of vehicle emissions testing, tune-up, and certification, as well as to improve fuel efficiency and reduce exhaust emissions of gasoline motor vehicles.
- 3- **The World Bank document on country environmental analysis;**
- 4- **The UNDP sustainable transport in Egypt**, with some specific information on the local level.

#### **4- Analysis of Thematic Areas**

A thorough analysis for each and every thematic area has been done to identify problems and challenges, and to figure out priorities for action. Outcomes of such detailed analysis had revealed the following:

##### **For Solid waste**

The generation of MSW is continuously increasing with the progress of urbanization, concentration of population and economic and industrial development in GCR. Cairo alone generates about 10,000 tons/day of solid waste. Of this quantity, only 7000 tons are collected (70%); leaving 3,000 tons to accumulate in the streets or to be open burnt with evident impacts on air quality and human health. Until autumn 1998, the Government of Egypt did not have a national strategy for Solid Waste Management (SWM), and this has hampered the adoption of any local strategies by the respective Governorates. The local governorates had relied on their scarce public fund to improve the different components of the system in their own local context.

The analysis of the current MSW management in Cairo has revealed a number of constraints/challenges for which a number of priority actions could be figured out:

##### **Challenges:**

- 1- Inefficiency of the current system.

- 2- Absence of initiatives addressing waste minimization and segregation at source.
- 3- Poor integration and coordination among different concerned parties.
- 4- Weak enforcement of the law.
- 5- Inadequacy of proper funding.
- 6- Inadequacy of qualified and trained personnel to manage and operate the system.
- 7- Inadequacy of complementary infrastructures.
- 8- Weak environmental public awareness.

***Priorities for action:***

- 1- Increase the efficiency of collection and transportation services.
- 2- Introduce some new initiatives for source reduction and segregation.
- 3- Rehabilitation of dump sites.
- 4- Establishment of transfer stations.
- 5- Capacity building programs.
- 6- Awareness raising programs.

**For Industrial Development**

Industrial development has always been a major direction for Cairo governorate, and for GCR by large. Cairo is considered one of the major industrial cities in the country as it contains a considerable number of industrial clusters, and surging with a number of industrial activities that have a leading role among other activities in providing job opportunities and in attaining economic growth. The governorate makes a sizable contribution to the nation's economic engine. Its share of the national economy (GDP) was 31% in 2006. Along with industrial development pollution and other environmental problems appear that have and still represent a challenge to the governorate. In addition, land use problems; mainly of intermixing residential and industrial activities of various sizes; are casting shadows on the situation.

The analysis of the current industrial development in Cairo has revealed a number of constraints/challenges for which a number of priority actions could be figured out:

***Challenges:***

- 1- Difficulty and high costs of relocation of large scale industries.
- 2- Failure of some old industrial facilities to comply with environmental policies and standards.
- 3- Inadequacy of proper land slots for relocation of polluting industrial activities, combined with difficulties in securing necessary approvals.
- 4- The random spread of polluting small and medium scale industries within the residential areas.
- 5- Problems facing existing industries to adopt cleaner production concepts.
- 6- Unavailability of IHW management system in Cairo.

***Priorities for action:***

- 1- Control of industrial pollution through the promotion of cleaner production technologies.
- 2- Identify pollution sources of industrial establishments for relocation plan.
- 3- Provide the necessary land for relocating small and medium-type industries.

### **For Urban Development (Slums):**

As for Cairo, the existing slum areas are 81 slums; which have grown on state-owned land with a total area of 2670 acres. These include 68 slums on a total area of 2500 acres, which are currently in a developing phase, and another 13 slums having a total area of 170 acres, which urgently need to be completely removed and re-planned. Within the context of the **National Program for Upgrading and Development of Informal Areas in Urban Areas** and in order to achieve sustainability in the urban development sector, Cairo governorate has launched a project for Planning and Upgrading of some of its slum areas. The aim of this pilot project is to rehabilitate the informal settlement of Manshiet Nasser (located East of Cairo) which is considered as one of the most dense (400 inhabitants/acre), over populated (350 000 inhabitants) and deteriorated areas of Cairo.

To foster efforts directed towards solution of the problem of urban slums; and in close collaboration with **the Framework Strategy for the Development and Elimination of Slums**; Cairo is currently working in two other programs: **The Containment of Greater Cairo slums**; and **the Urban Development Program**. Priorities for the development of slums are set according to the characteristics of each slum area; e.g. population, area, urban deterioration level, growth rate, slum location and the economical land value.

### **Challenges:**

- 1- Absence of accurate and systematic information on slum areas and their needs.
- 2- Limited accessibility to services and infrastructure and the appearance of illegally obtained public services.
- 3- Increase in the number of deteriorated buildings, as a result of confused ownership.
- 4- Dependency on informal economic sector to sustain businesses and to combat unemployment. This informal sector has difficulty in accessing the public markets, and needs to be changed to a formal one in order to provide social safety networks, develop human resources and to address environmental issues of concern.
- 5- Institutional and financial constraints, as there was a marked difference between projects planned, and those being approved and the actual executed investments.
- 6- Inadequate legal framework to eliminate appearance and existence of slums.
- 7- Inadequate implementation of some policies (such as; adding solid waste collection fees to the electricity bill) despite that some of these slums did not receive the service at all.
- 8- Lack of environmental awareness.

### **Priorities for action:**

- 1- Enforce existing policies/mechanisms that prevent the creation of new slums.
- 2- Building an integrated database for slum areas for planning purposes (on going action).
- 3- Increase coordination among different parties involved in slum development (on going action).
- 4- Focusing on community empowerment and encouraging self-motivated actions (local community initiatives).
- 5- Providing and increasing access to infrastructure and services.
- 6- Enable land ownership and property registration.

### **For Transportation and its emissions**

The transportation problem in Cairo has a dual face of increasing emissions' loads from traffic far beyond the allowable limits stated by the law, and the increase in travel time taken by Vehicles due to road congestion, and both cause a potential loss in the national economy, either directly or indirectly. In general, Cairo suffers immanent difficulties in movement of people and the flow of traffic; this is caused by the incredible and unexpected increase in the number of vehicles of various kinds. A major priority for transportation sector in Cairo is to improve the planning capacity for an effective, cost-wise system through enabling local government agencies responsible for overseeing transportation planning to fulfill their role.

Transportation problems in Cairo have different facets, they include; **traffic problems, mass transit problems, parking-lot problems**, and in some if not rather all of these problems, there always been a **pollution dimension** aggravating them and posing a real threat to the public health and/or environment. The evolution of transportation sector in Greater Cairo over the past three decades showed an increase in the use of passenger cars (including taxis), that are currently absorbing over one-fourth (25%) of the motorized trip market. Some forms of public transport, in particular public bus services and light rail, have suffered a corresponding decline in patronage. Shared taxis, on the other hand, have aggressively increased their market share.

#### ***Challenges:***

- 1- Inefficiency of public transit system.
- 2- Inadequacy of roads infrastructure to co-op with escalating number of transportation modes.
- 3- Inefficiency of integration of different transportation modes.
- 4- Limited access to financing mechanisms.
- 5- Inefficiency of inter-sectoral coordination among different concerned parties in transport sector.
- 6- Lack of adequate level of public awareness.

#### ***Priorities for action:***

- 1- Increase the efficiency of public transit system.
- 2- Encourage people to use public transport and less private cars.
- 3- Promote the use of environmentally-sound solutions.
- 4- Develop behavioral change pilot programs.
- 5- Use of advanced technological approaches to solve traffic throttling problems.

As the city grows, and particularly as it becomes more economically stable, its vehicle fleets will grow more rapidly than road space. Increased traffic congestion (and pollution) will obviously aggravate. The problems will principally be "chronic traffic congestion"; with insufficient roads space to meet competing demands of private vehicles, public transport, commercial vehicles, non-motorized vehicles and pedestrians.



## **5- Selection of Projects**

Depending on the results of thematic areas' analysis, a number of pilot projects had been identified and proposed for each and every thematic area upon extensive consultation with local authorities at the city, that represent a priority for the local Governorate in achieving sustainable Cairo, they are:

- **In the Solid Waste Sector**, Source Segregation in a selected district
- **In the Industrial Development Sector**, Integrated Industrial Waste Management in Manshiet El-Sad Area
- **In the Transportation Sector**, Bus Priority Lane in Port Said st.

## **6- Conclusion and Recommendation**

There is a need for further and detailed actions to be implemented in many other areas than the four SCP selected priority areas regarding the introduction of sustainable consumption and production patterns, also establishing a permanent national SCP committee for policy making and to carry out activities on the national level is an important issue to be taken in consideration. And, with regards to each of the four thematic areas, a number of recommendations were derived in order to give guidelines for the improvement process in each sector.

## **7- Way Forward**

Looking to the future, environmental pressures will increase with the growth of economy. Rapid changes in lifestyle, particularly in urban areas, are already noticeable. Consequently, there is a need for policies to give consumers an incentive to move towards more sustainable patterns of consumption. National SCP initiatives should focus on economic growth and social change which improve the quality of life, and not only concentrate on the increasing level of individual consumption, with the related negative environmental impacts. A permanent National Committee responsible for the SCP initiative will enhance its progress and spreads its concepts further into other cities and governorates. Finally, Life Cycle Analysis (LCA) and Life Cycle Costing (LCC) are important methods for helping to determine the overall environmental impacts of goods or products, and their lifetime cost.

## 1. Introduction

Sustainable consumption and production is a holistic perspective on how society and the economy can be better aligned with the goals of sustainability. Sustainable consumption and production (SCP) has been defined as:

*"A holistic approach to minimizing negative environmental impacts from the production-consumption systems in society. SCP aims to maximize the efficiency and effectiveness of products, services, and investments so that the needs of society are met without jeopardizing the ability of future generations to meet their needs."* (Norwegian Ministry of Environment, Oslo Symposium, 1994).

SCP aims to reduce emissions, increase efficiencies and prevent unnecessary wastage of resources within society, through the stages of material extraction, investment, production, distribution, consumption, to waste management. In addition to these environmental and economic goals, the social component is concerned with equity within and between generations, improved quality of life, consumer protection and corporate social responsibility. Some key SCP policy challenges currently include:

- achieving a decoupling between economic growth and environmental deterioration,
- integrating life-cycle thinking in policy-making;
- improving the quality of life without increasing negative environmental impacts; and
- Preventing the rebound effect, where growing consumption outstrips technology improvements and efficiency gains.

Unsustainable patterns of production and consumption are recognised as one of the major contributors to environmental problems, including climate change, degradation of natural resources and loss of biodiversity, and environmental impacts caused by emissions and waste.

The following table shows the consumption expenditures per region in comparison with the population of each region.

Region	Share of World private consumption expenditures (percent)	Share of World Population (percent)
United States and Canada	31.5	5.2
Western Europe	28.7	6.4
Latin America and the Caribbean	6.7	8.5
Eastern Europe and Central Asia	3.3	7.9
South Asia	2.0	22.4
Australia and New Zealand	1.5	0.4
<b>Middle East and North Africa</b>	<b>1.4</b>	<b>4.1</b>
Sub-Saharan Africa	1.2	10.9

Source: World watch Institute (2004). State of the World.

The present program for Sustainable Consumption and Production (SCP) for Cairo City stems from the African 10 Year Framework Program on Sustainable Consumption and Production and other related activities. The preparation of this program has followed the UNEP methodology and Marrakech Process and is in context with the main thematic priority areas identified for Africa.

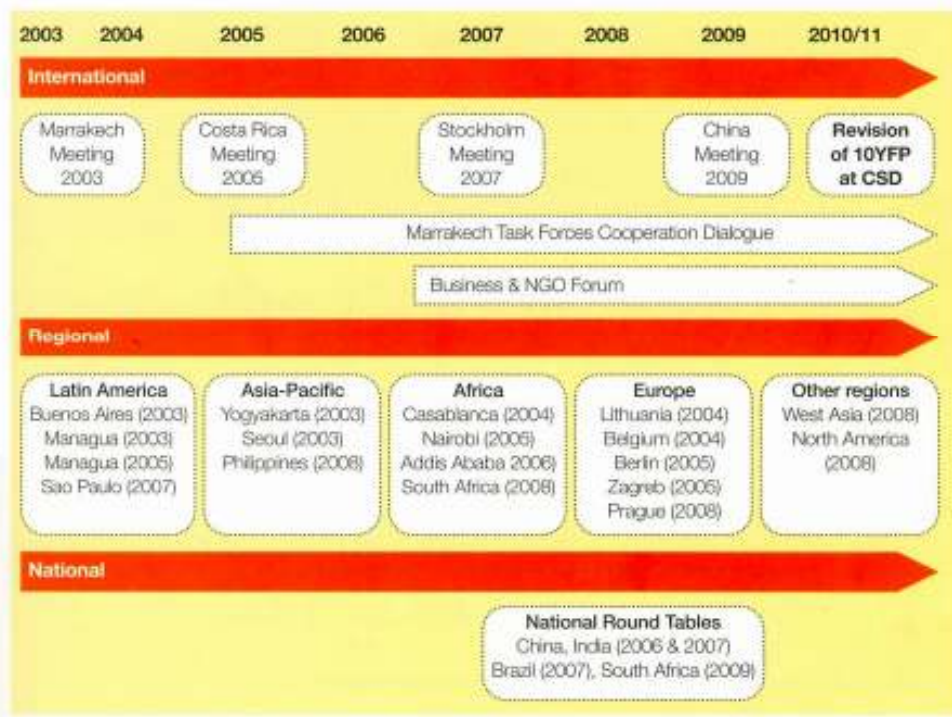
The SCP program for Cairo City is based on several national and local policy frameworks, strategies and other initiatives in Egypt. Eg. The National Environmental Action Plan (NEAP), the National Sustainable Development Strategy, Strategy and Action Plan for Cleaner Production in Egyptian Industry, National Strategy for Integrated Solid Waste Management, Cairo Urban development Program, Cairo Traffic Planning and Engineering Program...etc.

## **1.1 Background**

The challenge of achieving SCP patterns has been addressed at global level since the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. The Conference provided the fundamental principles and the program of action for achieving sustainable development.

Ten years later, the Johannesburg World Summit on Sustainable Development in 2002 recognised that: *Fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development.*

All governments were invited to promote SCP, and the Johannesburg Plan of Implementation called for the: *development of a 10-year framework of programs in support of regional and national initiatives to accelerate a shift towards sustainable consumption and production patterns that will promote social and economic development within carrying capacity of ecosystems.* The frameworks should strengthen international cooperation and increase exchange of information and best practices to facilitate the implementation of national and regional programs to promote SCP.



**Figure 1 : Marrakech Process Consultations and Meetings**  
**Source:** Guidelines for National Programmes on SCP, UNEP, 2008

In the year 2000, adopted by all United Nations Member States, the Millennium Declaration and the Millennium Development Goals have become a universal framework for development and a means for developing countries and their development partners to work together in pursuit of a shared future for all. To achieve the goals, nationally-owned development strategies and budgets must be aligned with them. This must be backed up by adequate financing within the global partnership for development and its framework for mutual accountability.

The so-called 'Marrakech Process' was launched at the first international meeting on the 10-year framework held in June 2003 in Marrakech, Morocco. The process is intended to strengthen international cooperation, increase exchange of information and facilitate the implementation of national and regional SCP programs. The development of the 10Year Framework Program consists of the following phases:

- a) Organizing regional consultations to promote awareness and identify priorities and needs for SCP;
- b) Building regional strategies and implementation mechanisms with regional and national ownership, to be endorsed by the relevant regional institutions;
- c) Implementing concrete projects and programs on the regional, national and local levels to develop and/or improve SCP tools and methodologies, with the Marrakech Task Forces and the Cooperation Dialogue as the main implementation mechanisms;
- d) Evaluating progress, exchanging information and encouraging international cooperation and coordination.

In order to support the implementation of concrete projects, and to focus on specific themes of SCP, the Marrakech Task Forces have been created with the participation of experts from developing and developed countries. So far, seven Task Forces have been created:

- Cooperation with Africa (led by Germany),
- Sustainable Products (led by United Kingdom),
- Sustainable Lifestyles (led by Sweden),
- Sustainable Public Procurement (led by Switzerland),
- Sustainable Tourism (led by France),
- Sustainable Buildings and Construction (led by Finland),
- Education for Sustainable Consumption (led by Italy).

As part of these international and regional efforts, the “African 10-YFP on SCP” was launched in May 2006 with the institutional support of AMCEN, NEPAD, the African Union, UN ECA and UNEP. Under the International Marrakech Process on the 10 YFP, the Federal Government of Germany took the lead to establish the Marrakech Taskforce on Cooperation with Africa. One of the key activities that have been identified in the context of the German Taskforce on Cooperation with Africa and the Regional follow up on the African 10YFP is to assist a few African countries and cities to develop their programs on SCP in reference to the key thematic areas identified for Africa. These key thematic areas include:

- Energy
- Water and sanitation
- Habitat and sustainable urban development
- Industrial development

## **1.2 Scope of work/ Cairo City Program**

In April 2007, EEAA in cooperation with UNEP has organized a seminar on SCP attended by different concerned stakeholders. During consultation and discussions between EEAA and UNEP; the latter has called for a joint project within the framework of implementation of African 10YFP on SCP for Cairo City; as an example for mega cities in Africa.

As a follow up, EEAA and Cairo Governorate (CG) have signed a Memorandum of Understanding (MOU) for a joint project between UNEP and EEAA on SCP for Cairo City.

In June 2007, the Egyptian Minister of Environment has approved the project and on selecting the Egypt National Cleaner Production Center (ENCPC) as the implementing agency for the project in cooperation with EEAA and Cairo Governorate.

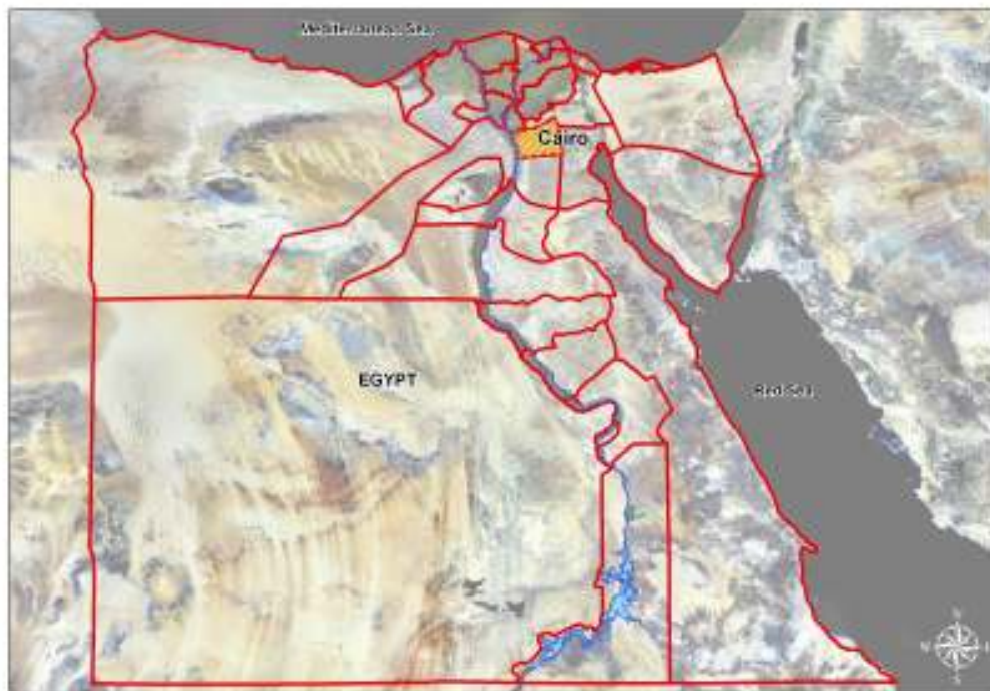
Later the same year, EEAA and ENCPC held a meeting with the Governor of Cairo and all the relevant and suggested parties of the project. During the meeting, four thematic areas were identified as the focus of the SCP Program for Cairo City as they represent high priority issues for the city. The thematic focus areas include:

5. Solid Waste Management
6. Industrial Development
7. Urban Development (with focus on slums areas)
8. Transportation and its Emissions

The SCP program in hand has been prepared following the general methodology of the African 10 Year Program Process. This was developed by UNEP to assist in the preparation and implementation of National or City SCP programs. This Methodology is furtherly described in **Annex 1**.

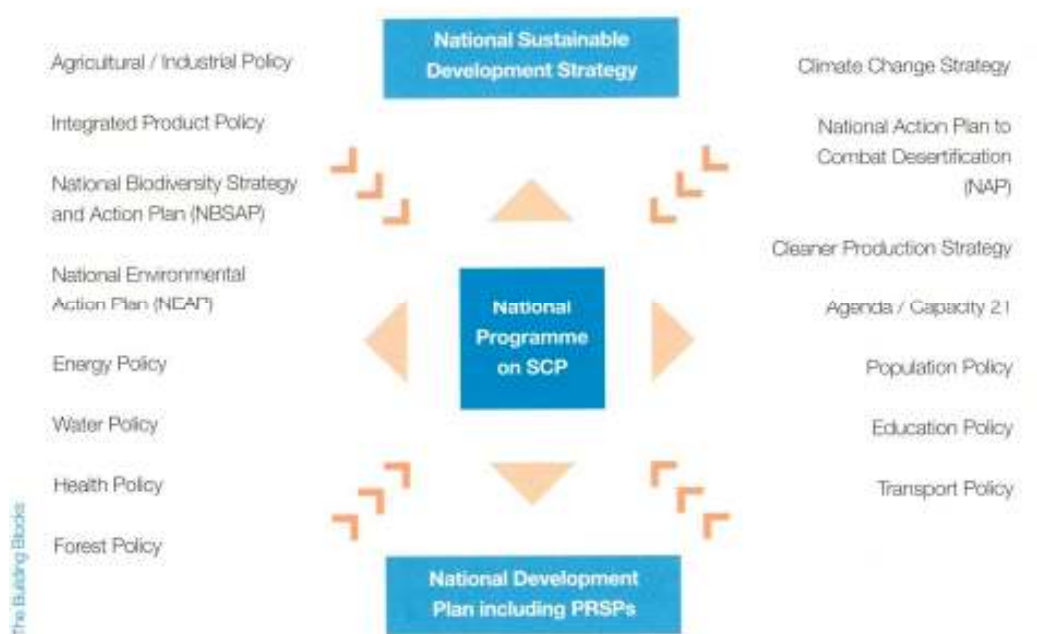
### **1.3 Reasons for selection of Cairo city**

Cairo is considered one of the biggest cities in the world, where it is the sixteenth most populous metropolitan area in the world, and one of the largest cities in Africa, giving a significant indicator for a highly consumption rate inside Cairo. A variety of activities are taking place in Cairo, where the majority of Egypt's commerce is generated in City, or passes through the city.



**Figure 2:** Cairo city location inside Egypt

Cairo suffers from many environmental problems and phenomena; Land, Water and Air pollution, due to the existence of many polluting industrial activities, which could be a significant model covering all the SCP priority areas. Consequently, many projects are currently taking place to help in raising the public awareness to the importance of having clean environment.



**Figure 3:** Integrating with existing national level Strategies  
**Source:** Guidelines for National Programmes on SCP, UNEP, 2008

## 2. National Context

In this section the Egyptian National context will be discussed with reference to Sustainable Development (SD) and SCP. The general foundations for Egypt’s policies and strategies regarding SD and SCP will be touched upon to pave the road towards addressing specific sectoral contexts relevant to the SCP Program for Cairo.

### 2.1 Policies

Egypt has enacted and issued number of policies, legislations and laws in the context of regulating and governing the development process in many areas in relevance to Sustainable Development (SD), as follows:

#### A. Environmental Law

In the year 1982, Egypt ascertained its interest in environmental issues by establishing of the “Egyptian Environmental Affairs Agency” (EEAA). It is the highest governmental, administrative and coordinating body responsible for tackling different environmental issues, as well as formulation of the general policy, and preparation of the necessary plans for the protection of the environment.

In 1994, Egypt has issued its first law for the protection of the environment; Law 4/1994; that has been considered the highest institutional umbrella for actions regarding protection of the environment. The law re-structured EEAA and widened its mandate. Later in 1997, the Ministry of State for Environmental Affairs (MSEA) was created. The new Ministry had focused, in close collaboration with national and international partners, on defining environmental

policies, setting priorities, implementing initiatives/agreements within the context of SD.

### **B. Consumer Protection Law**

In the context of regulating and organizing the relationship between the consumer and the trader, which is still un-balanced relation; the Ministry of Trade and Industry have formed the idea of having a system to protect consumers, by enacting the consumer protection law number 67 of 2006; which was designed to provide comprehensive protection to consumers by ensuring traders' commitment and obligation to comply with the law in order to avoid the penalties and fines the law has defined.

In this framework, the Law has established the Consumer Protection Agency, which aims by the implementation of the law to protect consumers, which will eventually balance the interests of all parties in the market, and boosting the growth of the national economy. When consumers, with the protection of the law and the help of the consumer protection NGOs all over the nation, confront all forms of commercial dishonesty, consumers will oblige traders and suppliers to seek accuracy and exercise caution when offering goods and services to them. This will ensure products' compliance with quality standards and will eventually improve the national services and industries, basically satisfying consumers' interests stimulating competitiveness with foreign markets.

Other laws and policies have been issued in relevance to Sustainable Development (SD) as mentioned above, such as; the urban planning law number 3 of 1982, Irrigation law number 12 of 1984, and other laws and policies related to the industrial development, climate changes and usage of energy in the development projects.

### **2.2 National Commission on Sustainable Development**

In the year 2006, the Cabinet of Ministries had issued a decree establishing the National Commission on Sustainable Development under the leadership of the MSEA, and with membership of a number of different line ministries. This reflected the government political commitment towards achieving sustainable development through integration and co-operation among different ministries. This Commission assumes the following responsibilities:

- Adoption of national sustainable development policies through integration of the environmental issues within development and service sectors framework.
- Review and approve of a National Strategy for sustainable development.
- Ratification of National plans and technical support needed for the national authorities to achieve sustainable development targets.
- Evaluation and ratification of action plans, and proposed funding opportunities from the Technical Secretariat according to priorities of the national action plan.
- Adoption of methodologies developed by the Technical Secretariat to support and strengthen decentralization, helping different institutions on sectoral level to carry out their mandates.



- Adoption of the needed legislation reforms to cope with sustainable development needs.
- Approval of appropriate methodologies to consult on the concepts of sustainable development in a participatory guarantee establishes rules for good governance.
- Issuing periodic reports concerning sustainable development achievements and identify Egypt situation in the field of sustainable development.

Further, the MSEA has issued the decree no (26) in 2008 to establish the Technical Secretariat of the National Commission on Sustainable Development. Its main objective is to propose and prepare the sustainable development policy, strategy and action plan.

### **2.3 The National Steering Committee for the preparation of the SCP Program for Cairo**

As a final step for the implementation of the SCP program for Cairo, a Ministerial Decree (26) for the establishment of the Steering Committee was issued in 2008. The Steering Committee includes the following members:

1. President : Dr. Mawaheb Abu El Azm , CEO of EEAA
2. Vice President : General Ahmed Kaml, General Secretary of Cairo Governorate
3. Executive Secretary : Dr. Atwa Hussien Atwa, Greater Cairo- Fayoum branch office manager
4. Coordinator : Ms Samah Saleh , EEAA
5. Head of Urban Development Working Group : Eng. Khalel Shaat, Cairo Governorate
6. Head of Solid Waste Working Group : Eng. Hussein Ahmed , Cairo Governorate
7. Head of Industrial Development Group : Eng. Nasr Essa , Cairo Governorate
8. Head of Transportation Working Group: Colonel, Safaa & Eng. Fifi Radwan, Cairo Governorate
9. Representative of Investment Department : Mr Ali Thabet, Cairo Governorate
10. Representative of Egypt National Cleaner Production Center : Eng. Hanan El Hadary, Director

### **2.4 The National Environmental Action Plan (NEAP; (2002-2017)**

Egypt's National Environmental Action Plan (NEAP) is the main national framework for action and activities supporting environmental management for sustainable development. It had been prepared by the capacity-21 unit at EEAA under the auspices of the United Nations Development Program (UNDP), and has been published in the year 2002.

The primary goal of NEAP is to provide support for the introduction of participatory and demand-driven environmental planning process, favored for sustainable development, stating its goal of attaining development that is economically, politically, and environmentally sustainable.

The NEAP is considered as the basis for development of local environmental initiatives, as it integrates with sectoral plans for the economic growth and social development. It delivers programs and projects that address environmental issues in several sectors relevant to the protection of human health and the management of national resources. These sectors are:

- Water Resources
- *Air*
- *Land Management*
- Marine Environment
- *Waste*
- Biological Diversity
- Bio-safety

## **2.5 Agenda 21 and Egypt's country Profile**

According to the UN, Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations, governments, and major groups in every area in which humans have impact on the environment. It were adopted by more than 178 government at the UN conference on environment and development (UNCED) held in Rio de Janeiro, Brazil 1992.

Egypt adopted its own Country Profile and Agenda 21 in 2002 according to the UN context. The purpose of the profile is to help in monitoring the country's own progress, track and record the national actions undertaken to implement the agenda.

Agenda 21 delivers a comprehensive plan of action taken both on the national and local levels regarding coordination bodies, legislation and regulations, policies, strategies and action plans. The Agenda comprises 42 chapters dealing with different areas such as: combating poverty, demographic dynamic and sustainability, protecting human health, land management, industry and sustainable development.

Chapter 4 of the Agenda has a strong relevance to Sustainable Consumption and Production, as it deals with *changing consumption patterns in different sectors*. It mentioned some programs and projects that had been implemented at the national level including concerned parties and stakeholders involved. These programs are:

- **Energy**
  - Natural gas supply for households
  - Providing alternatives to unsustainable energy resources for urban and rural households.
  - Supply energy to low-income households.
  - Energy Efficiency Improvement and Greenhouse Gas reduction.
- **Transport**
  - Hybrid-Electric Transportation Bus Technology.
  - Underground mass transit system.
  - Implementation of Ring Roads.

On the other hand, chapter 7 of the Agenda had dealt with promoting *sustainable human settlement development*, where it has mentioned programs and actions in place aiming to achieve geographically balanced and sustained settlement structure. Examples include:

- The national program for upgrading and development of informal areas within urban context; and
- The supply these areas with potable water and sanitary drainage.

Chapter 41 of the Agenda had dealt with the *national strategy for industry*. A set of programs and projects are being implemented in the context of environmental protection such as:

- The Egyptian Pollution Abatement Project; and
- The elimination and reduction of ozone depleting substances.

## **2.6 The Millennium Development Goals for Egypt (MDGs)**

The United Nations and the Government of Egypt had published two country reports in 2004 on the country progress towards meeting the MDGs. The eight goals are stemming from the Millennium Summit held in 2000, where heads of States from all over the world agreed to achieve tangible progress in key development areas by 2015. The country reports address steps taken by the country and actions needed for achieving these goals.

The seventh goal deals specifically with *‘Ensuring Environmental Sustainability’*. The reports have identified the main directions needed in order to achieve this goal. In fact, many of these directions are related to the SCP program for Cairo and its four thematic areas. The following are the issues that should be supported by the international community to reach this goal:

1. Bridging geographical disparities and guaranteeing equal access to resources and services.
2. Increasing the level of environmental awareness through encouragement of consumer awareness initiatives and community-based environmental intervention.
3. Further develop alternative sources of energy, especially solar.
4. Implementing Urban Observatories to report on slum conditions and manage policy-related to water, sanitation as well as housing and land tenure.
5. Implementing urban development strategies to guide local actions.
6. Monitor national participatory policy implementation in Urban and environmental development efforts.
7. Development of projects to reduce the GHG emissions.

## **2.7 National Sustainable Development Framework Strategy**

Confirming its commitment to **Sustainable Development**, Egypt has issued its **National Sustainable Development Strategy (NSDS)** in 2008. This document facilitates the process of building upon and harmonizing various sectors of economy, social and environmental, together with the current policies and action plans operating in the country.

The sustainable development strategy identified and presented its 11 priority areas/challenges, which have been addressed by the concerned stakeholders taking into consideration the economical, social, institutional and environmental aspects. It is noteworthy that the strategy sets out the general directions within each priority area in order to implement the main strategy objectives.

The areas addressed by the strategy and which are in line with the four SCP thematic areas of Cairo, and they are represented as follows:

- **Industrial Development:**
  - Reduce the intensive use of material, energy and water resources in industry.
  - Promotion of cleaner production.
  - Shifting reliance on energy production and consumption towards natural gas to ensure sustainability of energy supply according to the National Energy Efficiency Strategy (NEES).
  - Linking between research institutions dealing with energy uses efficiency and the industrial sector to encourage the use of new energy sources.
  - Establishing industrial zones for **Small Medium Enterprises** (SMEs) that are in line with environmental regulations will help in reducing their energy consumption.
  
- **Solid Waste Management:**
  - Modification of the existing packaging system to reduce the amount of waste, and encouraging the use of recyclable materials is also one of the National Solid Waste Management Program (NSWMP) principles.
  - Increasing public awareness through education, training and media to offer a change in the life-style and consumption and production patterns.
  - Supporting recycling industry and assist in developing and enhancing their market and production.
  - Contracting private companies at the local level for waste collection and disposal.
  - Decentralization of solid waste management.
  - Encouraging cost-recovery principle for waste collection and disposal services.
  
- **Urban Development:**
  - Upgrading slum areas and providing services and infrastructure, as well as preventing the growing-up of new areas.
  - Providing slum dwellers with access to land and low-cost building materials.
  - Offering better land use planning and management for energy saving.
  - Promote measures of energy saving; such as efficient lighting
  - Encouraging energy-efficient buildings' design.
  
- **Transportation:**
  - Formulate a control program for emission reduction and fuel change.
  - Electrification of railways to reduce fuel consumption
  - Applying a cost-recovery system in the public transportation.
  - Use of information systems and modern technical and administrative tools for better control of traffic flow.
  - Improve the quality of public transportation.

- Planning and development of roads' network to enhance traffic system.

### **3. Sectoral Context**

Based on the general national policy frameworks- discussed in the previous section- Egypt has embarked on developing more elaborate plans taking the set policies into the next level of planning. In so doing, the country has developed sector-specific strategies, programs, plans and projects to guide the implementation of policy directions.

In this section, the main strategies, programs, plans and projects relating to the four thematic areas of this SCP program are described. As Egypt has developed and prepared a multitude of such documents; some in collaboration with international organizations; the ones with most relevance to the present study were selected.

#### **3.1 Solid Waste**

##### **A. The National Strategy for Integrated Municipal Solid Waste Management**

A Solid Waste Management Strategy for the country had been developed in 1992. Its full implementation was not realized at the time for several reasons. In 2000, a National Strategy for Integrated Solid Waste Management (NSISWM) was prepared. This national strategy focused on Municipal Solid Waste (MSW), identifying core problem areas, root cause(s), and conceptualizing a vision for possible and foreseeable solutions.

The goal and the major outcome from the implementation of the national strategy are to establish and achieve an effective, sustainable national system for IMSWM. The strategy anticipates a partnership of the Central Government, the Governorates, Local Governments, Industry and the Public. It depends heavily on the regional approach; with the Governorates being the principal participant for the implementation of that strategy.

The strategy also adopts a philosophy of management that addresses solid wastes as a natural resource that is founded on the development of its various prerequisites; embodying proper policies, legislation, institutions, human resources, technological infrastructure and supportive public awareness. In addition, it aims to provide Solid Waste Management services to all segments of the community in an environmentally sound manner & with least possible cost.

The broad objectives of the NSISWM are to eliminate uncontrolled accumulations of solid waste, and provide an efficient storage, collection, transfer and final disposal. This is to be achieved through a number of policies of solid waste reduction (source reduction), recycling, combustion (waste-to-energy), and sanitary landfilling- for all urban and rural areas in a manner to conserve natural resources and protect public health and environment.

Specific objectives of the strategy are based on the following key elements:

1. Improve current collection efficiency,

2. Extend service to un-served areas,
3. Maximize recovery of resources,
4. Enforce legislation, and
5. Develop manpower in solid waste management field.

### **Key directives of the National Strategy**

The following directives are suggested to serve as the foundation for the development and implementation of the strategy:

1. The Central Government shall be the facilitator for the establishment and implementation of the National Strategy, by assuming a supportive “enabling” role, whereas local government agencies will be assigned the full operational responsibilities, either by direct ownership and operation, or through contracting of services to private companies, or a combination of the two organizational approaches, but always under government control.
2. Implementation of the National Strategy shall be in the responsibility of the Governorates.
3. The existing operating systems shall be included in the new integrated municipal solid waste management system to the maximum extent possible.
4. Privatization of Solid Waste Management System will be the key policy where public cleansing services and Solid Waste Management will be gradually delegated to the private sector. The role of the governmental agencies will then to focus on planning and contracting conditions in accordance with the prevailing legislative and regulatory framework, as well as a well grounded “Public-Private Partnership”-PPP approach, thus Central Government and Governorate planning shall be integrated and shall foster this approach.
5. The integrated municipal solid waste management system will accept only those solid waste streams included in the strategy.
6. Storage, collection and disposal capacity [sanitary landfills] are the essential elements for IMSWS and are the first priorities for the strategy. Where these three elements are in place, steps should be taken to add other management methods such as composting, materials recovery and waste-to-energy. All IMSWMS work plans should examine the degree of these management methods that can be successfully and economically achieved, and should set schedules for adding these elements to the IMSWMS.
7. Solid waste reduction is dependent on a national materials use policy. Such a policy shall be established and implemented after implementation of the other aspects of integrated municipal solid waste management is underway.
8. The IMSWM system shall protect public health and the environment, shall be efficient and cost effective.
9. Attaching an economic value to wastes as being recoverable resources, will be essential as a necessary means for reducing disposal costs and negative environmental impacts from waste, and such policy requires adherence to the plausible “Reduce, Reuse, Recycle, and Recover” – 4R- type of hierarchy.
10. Public organisations and the civil community at large shall be full partners in all steps of the planning, development and implementation of the strategy.

## **3.2 Industrial Development**

### **A. National Strategy for Industrial Development**

Industrial development in Egypt is considered the driving wheel towards economical development. The industrial sector gets a great attention in Egypt from the government since it helps producing goods essential for the national economy, creating jobs, and opportunities to employ production factors and also helps hamming for Egyptian industries which meet the international markets standards.

The Industrial Development Authority in cooperation with the General Organization for Physical Planning (GOPP) has established a committee according to decree 17 for the year 2007; responsible for the preparation of an industrial development strategy. The strategy was completed in a draft form in 2008 and it is currently under final review and approval. The main features and directions of this strategy are analyzed hereunder.

#### **General objectives of the Industrial Development Strategy**

The industrial development strategy sets out the following main objectives:

- Achieving increasing growth rate enough to accommodate national demands.
- Achieving a balance on the sectoral level regarding industry types (consumable industries, manufacturing industries capital industries) in the development priorities framework and international recent developments.
- Strengthening the competitiveness of the national economy with foreign markets for export through strengthening production and commercial centers' comparative advantages in various regions of the country.
- Resettlement of investments and directing them to promising regions and areas, which have driving growth potential for urban development.
- Development of industries with accelerated rates and limited cost and high returns on the national level
- Development and improvement of regional economic centers to open broader fields to create job opportunities for young people in productive projects
- Full mobilization of the potential productivity and optimal use of national resources to achieve comprehensive development

The strategy has also set some directions with relevance to SCP. These include:

1. The need to adopt national, regional and local planning methods for Industrial Development in Egypt.
2. The need to re-direct industrial activity in the framework of the rationalization of oil and electric energy use.
3. Due to the relatively large size of informal industrial sectors (non-official) and the negative impact they have on industrial development, it is necessary to study their conditions and propose policies and incentives to reduce the indiscriminate industrial production.

4. The importance to identify basic needs and conditions that the industrial strategies should adapt with in order to face any environmental impacts; this includes sustainable natural resources consumption on the national and regional levels.
5. The need to identify development strategies that address consumption and productions needs while achieving *sustainable industrial development*.

## **B. National Activities on Cleaner Production for Industry**

### **B.1 National Strategy and Action Plan for Cleaner Production in Egyptian Industry**

The Egyptian Government- represented by EEAA- has set forth to develop the Strategy and Action Plan for CP in Egypt. The Environmental Pollution Abatement Project (EPAP) of EEAA initiated phase 1 of the activities towards developing a CP strategy. These initial activities have resulted in the preparation of a two-volume background document, representing the framework for CP implementation in Egypt.

The national CP strategy; published in May 2004; aims at developing an integrated framework for implementation of CP in the Egyptian industry within the overall context of national policy. The National CP was prepared by Ministry of Environment in cooperation with other concerned ministries (e.g. Trade and Industry, Finance, Foreign Trade, Electricity, Petroleum etc...) in addition to other competent stakeholders (e.g. Federation of Egyptian Industries).

Cleaner production contributes significantly to realizing two main national visions corresponding to the aims of the political leadership in improving the quality of life with the industry being the vehicle towards that end and achieving a healthy environment for the current and future generations. The first national vision is concerned with modernization of Egyptian industry, and the second involves sustainable development.

The main focus of the strategy and action plan is the industrial production process and production life cycle. The CP strategy has set forth some specific directions with direct relevance to the SCP program for Cairo. These include the following:

- The industrial sector in Egypt contributes to about 20% of the Egyptian GDP and employs approximately 15% of the workforce, and it results in considerable environmental impacts. Thus, reducing industry generated discharges to the environment will have strong impacts on reducing environmental degradation.
- Although the focus is on the production and manufacturing processes, emphasis should be directed towards the internal activities for recycling and reuse of the waste.



- In terms of industrial processes, the CP strategy's primary focus is on waste prevention. Thus, product recyclability should be considered as an integral part of CP together with on-site recycling.

The objective of the strategy could be summarized as follows:

- Defining CP and contrast it to measures for achieving environmental compliance.
- Clarifying advantages of CP to Egyptian industry and stakeholders.
- Reducing use of resources and hazardous materials.
- Promoting the production of clean products.
- Supporting CP option financially.
- Disseminating information related to CP.

## **B.2 Egypt National Cleaner Production Center (ENCPC)**

To translate Egypt's political commitment to CP, the Ministry of Trade and Industry established the National Cleaner Production Center (NCPC) in close cooperation with the United Nation Industrial Development Organization (UNIDO) in April 2005. The ENCPC aims at enhancing the competitiveness and the productivity of Egypt's industry, promoting sustainable social advance in a way compatible with environmental protection.

The Egypt National Cleaner Production Center (ENCPC) was established as a service provider to industry as an integral part of the Program for "Technology Transfer and Innovation Centers (TTIC)" of the Ministry of Trade and Industry (MTI). The ENCPC complements the sector specific (vertical) centers as a (horizontal) entity. Institution- as well as capacity building is core aspects in the TTIC concept.

The ENCPC is also fostering dialogue between industry and government, support investment and business cooperation to diffuse quality and productivity enhancing transfer of Environmentally Sound Technologies (ESTs). By doing so, it will provide the national industries with the necessary tools that will facilitate access to national and regional markets with environmentally sound products. Also, the center will improve the ability of national enterprises to successfully negotiate their position in the global markets. Furthermore, ENCPC will play an important role in coordinating already existing national CP efforts and promoting partnership between public and private institutions in Egypt. The main products and services offered by the ENCPC could be summarized as follows:

### **I- The Technical Assistance for Egyptian industry**

- **Energy Efficiency and Renewable Energy Program**

ENCPC is offering energy efficiency services to the Egyptian industry through carrying out in-plant energy audits to identify the opportunities to improve the energy management to reduce the need for investment in energy infrastructure, cut fuel costs, increase competitiveness in addition to achieve environmental benefits by the reduction of greenhouse gases emissions and local air pollution.

- **Cleaner Production Program**

The ENCPC is supporting the Egyptian companies in applying the cleaner production tools to processes, products and services to increase overall efficiency and reduce risks to humans and the environment. In this context, the ENCPC is providing CP in plant assessments and support the companies in implementation of cleaner production projects/

- **Chemical Leasing**

Chemical Leasing is a service-oriented business model that shifts the focus from increasing sales volume of chemicals towards a value-added approach. It aims at increasing the efficient use of chemicals while reducing the risks of chemicals and protecting human health. The ENCPC is implementing the chemical leasing with different Egyptian companies in close cooperation with UNIDO

- **Clean Development Mechanism (CDM)**

The ENCPC is supporting the Egyptian companies in preparation of Project Idea Note (PIN) to implement an emission-reduction project. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO<sub>2</sub>, which can be counted towards meeting Kyoto targets.

- **Environmentally Sound Technology Transfer**

The ENCPC is supporting the Egyptian company for Environmental Sound Technologies. The ENCPC prepares the technical specifications for new environmental sound technologies, helps in the bidding process including issuing tender, technical and financial evaluation and awarding.

- **PREMA**

In close cooperation with the German Technical Cooperation (GTZ), the ENCPC is offering an applied training program on Profitable Environmental Management (PREMA). PREMA is focusing on the low cost- now cost measures to improve the environmental performance of the companies and achieve up to 5% reduction in cost.

- **Industrial Waste Management and Recycling Projects**

- ***Waste Valorization Program***

- This program involves investigating collective Industrial Waste problems and finding solutions including Waste Management and Recycling Initiatives (closing the material cycles in industry). The ENCPC support the Egyptian companies in preparing feasibility studies for Industrial waste reuse or recycling.

- ***Zero Waste Projects***

- The ENCPC is providing technical assistance for the Egyptian companies from different sectors to implement the Zero waste concept. This is based on the benchmark cases worldwide.

## **II- The Management System and Certifications**

- The ENCPC is assisting the Egyptian companies in the process of prequalification according to different ISO standards certificates (e.g. ISO14001, 18001,9001,22000 Food Safety, HACCP,)

- Corporate Social Responsibility (e.g SA8000 , ISO 26000)
- Supply Chain Management
- Compliance with REACH (New European Legislation Framework on Registration, Evaluation and Authorization of Chemicals)
- Environmental Impact Assessment (EIA) Studies

### **III- Financial Assistance**

The ENCPC is supporting the Egyptian companies with the following:

- Assist in following the procedures to obtain financing from different financing packages (e.g. EPAPII, World Bank, KFW,).
- Assist in the preparation of technical specifications, tendering procedures, technical and financial evaluation and awarding.

### **IV- The Training Programs**

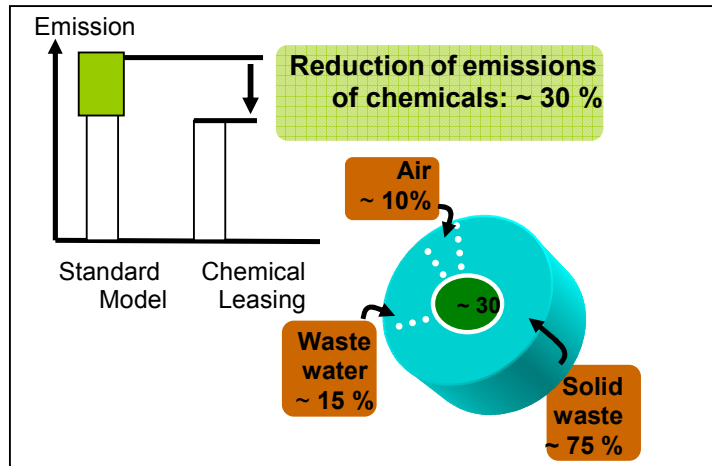
- Energy Efficiency
  - Fundamentals of Energy Efficiency
  - Certified Energy Management
- Zero waste
- Optimization use of raw materials chemicals & waters
- Clean Development Mechanism
- Corporate Social Responsibility
- Chemicals Management (e.g. REACH, Chemical Leasing)
- PREMA (Profitable Environmental Management)

To achieve financial sustainability the ENCPC is focusing its design on the following aspects

- Clear demand orientation.
- Focus on services, which are useful to exporters (i.e. label issues) and combine these services with access to financing.
- Charges for services.

Within the current frame of Sustainable Consumption and Production approach, ENCPC is implementing a worldwide demonstration project on a new and innovative business model called Chemical Leasing (ChL). The ChL project is supported by UNIDO and financed by the Austrian government.

ChL approach aims to promote sustainable management of chemicals and to close the material cycles between suppliers and users of chemicals ("closing the loops"). The key element of ChL is a shift in paradigm away from the focus on increasing sales volume of chemicals towards a more service-oriented and value-added approach, with environmentally and economically sound benefits (see figure 4). The producer no longer sells the chemical but the associated merit and know-how. This reflects on a sustainable consumption and production for the used chemicals.



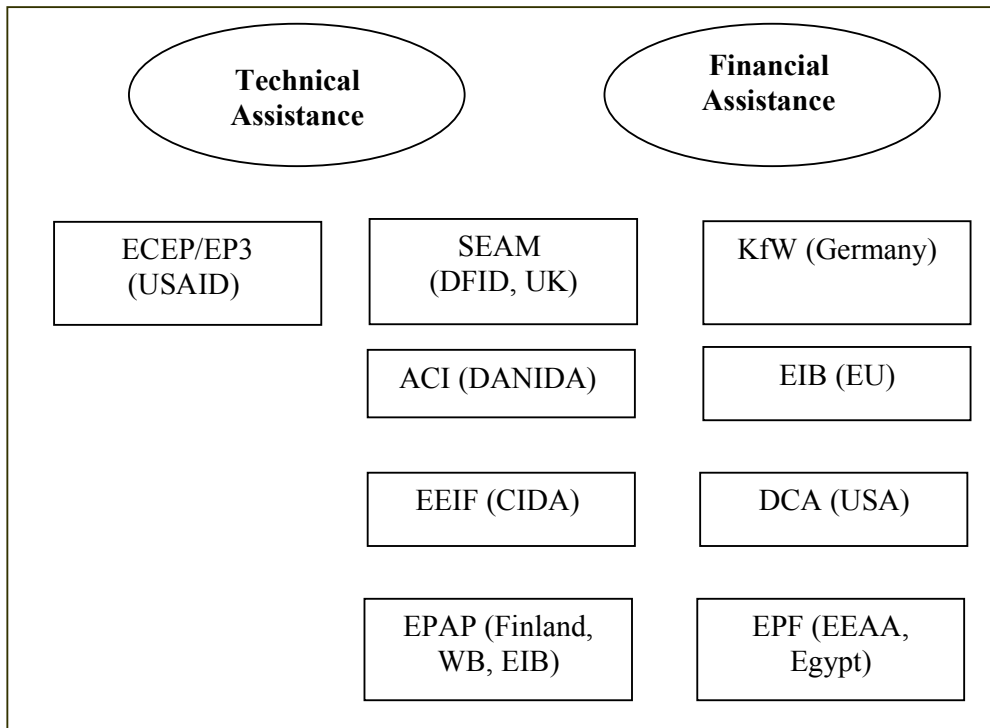
**Figure 4:** Chemical Leasing Environmental Benefits in OECD Countries

**Source:** Chemical Leasing, Jakl et al., publisher: Springer Wien New York, ISBN 3-211-40445-7

In this context, the ChL as a tool for sustainable consumption and production would be a core service provided by ENCPC for the Egyptian industry, in addition to the other related cleaner production services.

### **B.3 Ongoing and former National CP related Programmes in Egypt**

The following programs listed refer to institutions or companies delivering services in the field of information, know-how, technology, finance and other aspects related to services in the field of Cleaner Production. Figure 5 gives an overview of CP related interventions realized in Egypt.



**Figure 5:** CP related Projects in Egypt  
**Source:** ENCPC Project Document

Additionally various bilateral credit facilities, which are keen on financing environmental technologies, exist in the field of export promotion schemes (e.g. from Italy). Currently negotiations are also under way between the EEAA and Japan and WB for additional funds in the environmental field. Also in the technical assistance area numerous punctual assistance projects to the industry, related with environment have taken place. Examples are the GTZ (German Development Agency) programme working with hazardous waste and their elimination in cement kilns or a SIDA (Swedish International Development Agency) funded project which assessed solutions for de-dusting gases at metal-melting furnaces (foundry sector). ILO is also making efforts with a project related to social standards.

**Annex 2A** gives an overview of the scope of projects realized or under implementation related to CP in Egypt.

In total some 100 million USD in technical and financial assistance as grant resources and more than 50 million USD as credits have been invested in CP related activities in the last 10 years in Egypt.

Some 500 assessments (including credit assessments of KfW) have been realized and implementations of measures towards a sustainable enterprise development (SED) have been realized in some 300 companies, ranging from small private companies to large public sector enterprises. The main sectors targeted have been in textiles, food and the metal industry. Activities have however taken place in nearly all industrial as well as service sectors (e.g. hotels). Fuel switching (from heavy fuel oil to natural gas) has been a special emphasis in various projects. Various projects have documented

their demo-cases as success stories or also made sectoral CP reports focusing on best practices. CP related activities have focused on environmental aspects and have so far not included CSR.

While the number of enterprises assessed is still small in comparison with the total number of Egyptian enterprises, the fact remains that demo-cases for all sectors and for all regions including real implemented cases, have been done. Documentation seems to be lacking in various cases though, with the exception of EPAP and SEAM. Clearly the information barrier has been removed to a certain extent by the existing projects. However CP has not become a self-sustained business case with other enterprise replicating the “success” cases.

### **C. Egyptian National Program on Technology Transfer and Innovation Centers (ETTICs)**

Egypt has realized that, when it comes to positioning an entire economy in the global world, competitiveness and the rapid economic growth must be associated with technological development. Therefore, The Ministry of Trade and Industry (MTI) took the strategic initiative to establish Egypt Technology Transfer and Innovation Centers (ETTIC) to cover the needs of all industrial activities in Egypt.

The vision of ETTIC is to achieve long-run growth is due to technological innovation. Therefore, the vision of Egypt Technology Transfer and Innovation centers is to transform the Egyptian Industry and Export sectors to become knowledge based, high value added, sustainable and competitive sectors. In this context the mission of these ETTICs is to work as a catalyst to:

- Meet the Technological needs of the Egyptian industry and export sectors to become sustainable and competitive.
- Bridge the gap between the industry needs in technology, emerging market demands and the national and international technology base.
- Stimulate, transfer and diffuse new technologies and innovations.

#### **Types of ETTIC**

As the MTI has established a chain of specified technology centers that work as multi-functional service provider centers affiliated to the Technology Development Sector at MTI. The main target of ETTIC is to reinforce knowledge, experience, capacity, know-how, and technology transfer between those who have them and those who need them.

The first phase of establishing ETTIC combines the following **Sectoral Centers**:

1. Marble and Quarries Technology Center
2. Plastic Technology Center
3. Textile and Clothing Business Center
4. Fashion and Design Center
5. Food Technology Center
6. Leather and Tanning Technology Center
7. Furniture Technology Center
8. Jewellery Technology Center
9. Engineering Industries Technology Center

It also includes the following Specific Centers that provide services **horizontally** to all industrial sectors:

- Productivity and Quality Improvement Center
- Egypt National Cleaner Production Center
- Packaging Center

#### **Strategy and Approach of ETTICs**

ETTICs work utterly demand driven offering products and services to the market and charge for services. Centers are run as cost entities and shall work towards eventual financial self-sustainability. ETTICs shall offer services themselves with its core staff and might partly outsource to competent partners and local or international sub-contractors.

Key performance indicators (KPI) are:

- Number of companies receiving services;
- Number of service contracts;
- Number of trainees;
- Number of technology transfer contracts; Degree of financial sustainability.

### **D. Egypt's National Strategy Study on the Clean Development Mechanism**

Egypt has participated to the National Strategy Studies (NSS) Program, launched by the Government of Switzerland and the World Bank in 1997. This program has assisted Egypt in the development of the CDM Strategy which was undertaken in collaboration with the Ministry of State for Environmental Affairs and Egyptian Environmental Affairs Agency (EEAA).

The Egypt's NSS on the CDM aims at mainstreaming environment into the relevant sectors and minimizing the environmental impacts of development, through identification of priority policies and planning for their implementation.

The objective of the NSS is to develop options and opportunities presented by potential international markets for GHG offsets through the Clean Development Mechanism (CDM) of the Kyoto Protocol.

The study was prepared during the period from September 2000 to October 19, 2002 by a team from The Tabbin Institute for Metallurgical Studies (TIMS) and its affiliated Environment and Research Center (E2RC), Egyptian Environmental Affairs Agency (EEAA), and Ernst Basler + Partners Ltd. (EBP).

#### **Objective of the National Strategy Study in Egypt**

The objective of the NSS in Egypt is to develop options and opportunities presented by potential international markets for GHG emission reductions through the Clean Development Mechanism (CDM) of the Kyoto Protocol and to identify the intuitional prerequisites needed to participate in the CDM.

In order to achieve these objectives, the study provided:

- An overview on existing work and earlier initiatives in GHG emission abatement and the CDM in Egypt;
- An assessment of the potential for CDM projects in Egypt in the energy, industry, transportation, solid waste management and forestry sectors;
- An assessment of the demand, size and prices in the international market for emission reductions from CDM projects and the identification of Egypt's opportunities in the market;
- Options and recommendations for the development of the institutional framework and the identification of key capacity building needs that will enable Egypt's participation in the CDM;
- A portfolio of possible CDM projects to facilitate prompt start of the CDM in Egypt.

As an important additional result of the study, numerous decision makers and experts from the involved institutions, including ministries, governmental agencies, private companies, energy and industry associations, universities, civil organization and consulting firms have been informed and trained in CDM issues. A robust network of institutions and individuals has been established, from which future CDM activities in Egypt should be able to rely on.

An extensive survey for identifying projects in the targeted promising sectors and technologies has been carried out, and resulted in the following list of proposed CDM project types for Egypt:

- Co-generation in textile, chemicals, food and beverage, metals, buildings, and hotel sectors.
- Energy efficiency in textile, chemicals, food and beverage, metals, buildings, and hotel sectors.
- Fuel switching to natural gas in industry and transportation.
- Wind energy.
- Organic waste management and municipal solid waste methane utilization.
- Afforestation projects.

Other project types may promote significant sustainable development in Egypt, but due to their high costs (more than 10 US\$/t CO<sub>2</sub>eq) they are less qualified for implementation under the CDM than under classical development and schemes. They are mainly:

- Integrated solar-fossil fuel combined cycle power station and solar pumps.
- Extension and electrification of railways and underground lines.
- Extension of waterways transportation infrastructure.

### **Elements of a CDM Strategy for Egypt**

The main components of a National CDM Strategy are presented in Annex 3B. Components to be considered in the strategy include the level of involvement of the Egyptian Government in the CDM market, the design and line-up of the domestic framework for CDM, the type of international investor targeted and the priorities in sectors and technologies for CDM projects.



## **Proposed CDM Action Plan**

The proposed action plan for Egypt's participation in CDM process translates the strategy into actual actions to be taken and financed. The proposed action plan covers the next 2-3 years. Its success should be monitored and evaluated regularly. Modifications/corrections should be foreseen.

### **Modules of Activities**

The action plan consists of Modules. A Module of activities is a set of logically arranged actions towards the achievement of a certain step, which will be linked with other modules to reach a specific output of the action plan. In the following, typical modules forming the action plan are proposed. For each of the nine modules, an indication of the required resources is given.

#### **Module 1: "Institutional Setting"**

It is recommended to establish a subcommittee under the existing inter-ministerial national steering committee on climate change in EEAA or to establish a completely new steering committee for CDM at EEAA. The second suggestion of establishing a new steering committee for CDM directly under EEAA and not under the committee of climate change may have two advantages. The first, it will have a higher institutional status which will give it higher power in handling its responsibilities, and secondly, it is rather than issues related to climate change which are more related to the state plans.

The direct human resources needed for the CDM Unit itself for the first two years are estimated within 3-5 staff. They are supposed to be assigned primarily by EEAA. After initiation of CDM projects for implementation, it is expected to be self-funded by local and foreign partners of CDM.

#### **Module 2: "Establishment of National Criteria and Baseline for CDM"**

Development and continuous revision of national sustainable criteria for CDM projects (along the lines of economic, environmental and social criteria) is an important issue. They need to be approved by the national CDM committee. Also, research might be carried out to define national standardized baseline for certain project types, especially smaller ones.

For transparency and neutrality of the outcome, this module must be funded by national governmental fund.

#### **Module 3: "Awareness Raising"**

The following is the suggested list of activities required for awareness raising:

1. Definition of the targeted groups, e.g. technology suppliers for CDM and consulting engineers and registration of interested parties in database.
2. Communication with the key players through networking and publication and seminars.
3. Participation and presentations in existing conferences, industry fairs and other suitable forums (industry associations, NGOs etc.). Organizing between 2 to 3

workshops annually for investors and candidate projects hosts for promotion of GHG reduction through CDM. Emphasis will be laid on the private sector and the use of existing structures.

The CDM unit will mandate most activities to specialized companies, governmental and non-governmental institutions, making optimal use of existing skills, manpower and networks.

Resources needed for the CDM unit staff is supposed to be allocated by governmental contribution. Funding of activities and campaign is expected to stem from governmental contributions (also in kind), foreign donations and contribution by CDM customers.

#### **Module 4: “Technical Capacity Building”**

1. Consulting engineers, representatives from private enterprises and other stakeholders receive training in key GHG abatement technologies, CDM methodologies and project cycle.
2. Define steps to assist local firms in developing capacity for project validation, verification and certification.
3. Develop a database for local firms having capacities for CDM project implementation, validation and verification.
4. Resources are expected to be provided through the available climate change donor funding, later fees will cover the training costs. These activities are to be carried out by existing institutions such as training university centers and CDM technology suppliers.

#### **Module 5: “Investor Relations and Monitoring of International Offset Market”**

1. Continuously monitoring of the size, prices and characteristics of the international GHG offset market.
2. Continuously monitoring of the international and national GHG related regulations and procedures such as the **United Nations Framework Convention on Climate Change** (UNFCCC), GHG taxes and levies, trading systems etc. to early identify demand for Certified Emissions Reductions (CERs).
3. The public relation expert will handle the investor relations.
4. Development and continuous update of a short list of possible foreign investors.
5. Publishing flyers and articles for the promotion of CDM projects in Egypt.
6. Establishment of communication channels with Commercial Attaché's in the Egyptian Embassies and the Ministry of Foreign Affairs.
7. Presentation of CDM projects opportunities in Egypt at international conferences e.g. by holding side events at the Conference of Parties (COPs).
8. Pro-active approach to possible investor institutions, such as Prototype Carbon Fund (PCF), the Dutch Center Certified Emission Reduction Unit Procurement Tender (CERUPT) program, commercial carbon funds and carbon brokers.

The investor relation activities will be carried out in close cooperation with existing investment institutions such as The General Authority for Investment and Free Zone (GAFI) and the Federation of Egyptian Industries (FEI). Funding of activities is

expected to stem from governmental contributions (also in kind) and foreign donations.

#### **Module 6: “Project Package Preparation”**

1. This module consists of establishment of feasibility studies for 1-3 most promising CDM project candidates in Egypt. The studies include the assessment of the technical and financial project feasibility, the evaluation of the eligibility under CDM, the evaluation of environmental and socio-economic impacts and the assessment of the proposed financing schemes.
  2. The studies should be carried out in close cooperation with potential investor and candidate project host.

Resources for project package preparation are suggested to be funded by potential investors and candidate project host while supported by governmental in kind contributions.

#### **Module 7: “Project Pipe-Line and National Registry”**

1. Preparing a list of candidate projects for registration including all supporting calculations showing their validation as CDM projects.
  2. Regular submission of the list of projects to the steering committee for approval. It is possible that the steering committee will contract an independent local entity to support its decision.
  3. Build-up and operation of a national registry of approved CDM projects in Egypt. To improve transparency, this database should be open to the interested public (e.g. on the Internet).

For transparency and justice, this module must be funded by national governmental fund.

#### **Module 8: “CDM Handbook for Egypt”**

A CDM Handbook for Egypt’s possible projects for host and investors with basic information on technical, institutional and legal prerequisites, explanation of baseline and methodologies, cost and emission calculations, the CDM project cycle mode and sources of financing, including addresses and contracts should be elaborated. The handbook should be written at the time when the basic setting and outline of CDM rules (and eventually international CDM guidelines) exist. This module can be funded by all stakeholders of the CDM activities.

#### **Module 9: “Evaluation / Feedback / Corrections”**

Module 9 assures quality control of the national CDM activities:

1. All outputs of other modules are to be reported to a central coordination office in the CDM implementation unit.
2. The performance indicators of all the modules are to be developed.
3. A comparison on regular intervals of the performance indicators will lead to a fair evaluation of the whole components of CDM system. This allows to keep

- track of the performance of the CDM unit and to assess the degree of fulfillment of goals.
4. Relevant corrections have to be suggested by the coordination office and feed-backed to the National CDM committee.

For transparency and justice this module must be funded by national governmental fund.

## **D.1 United Nations Framework Convention on Climate Change-National Focal Point**

Egypt is facing the Climate Change challenges responsibly and taking proactive measures to protect its future generations from serious threats that will increase in the absence of actions taken today. A signatory to the 1995 United Nations Framework Convention on Climate Change (UNFCCC), Egypt has prepared a National Action Plan on Climate Change to coordinate its efforts to face this serious and important challenge, to maintain its sustainable economic development, and to provide a safe environment for its future generations.

Egypt signed Kyoto Protocol on 15 March 1999 and ratified it on 12 January 2005. The Convention entered into force on 16 February 2005.

### **- National Committee on Climate Change**

An inter-ministerial committee was formed in 1997 representing a wide range of governmental and non-governmental stakeholders. The Chief Executive Officer of the Egyptian Environmental Affairs Agency (EEAA) heads the committee, which is responsible for coordination, establishment, and communication of national policy on climate change.

As the focal point for climate change in Egypt, the Climate Change Unit (CCU) of EEAA's mandate entails the management of all national and international climate change activities, including the clean development mechanism (CDM). Egypt supports projects under the clean development mechanism as a new source of international capital investment flow to Egypt, and hence the formation of the CCU as well as the preparation of the CDM National Strategy.

The energy sector, along with the industrial, transportation, waste management, agricultural, and land use sectors, is the major GHG emitters in Egypt. They are considered main targets for CDM projects.

## **D.2 CDM Designated National Authority**

In addition to the State's concern in maximizing the benefit from Kyoto Protocol Mechanisms, especially Clean Development Mechanism, it established the Egyptian Designated National Authority for Clean Development Mechanism (DNA-CDM) by H.E. the Minister of State for Environmental Affairs on March 14, 2005 (Ministerial Decree No. 42 on 14/3/05), instantly after ratifying the protocol and its entrance into force in 2005

The DNA has achieved tangible progress in several sectors, (36) projects have been approved within the framework of the Mechanism. This is including the sectors of: New and Renewable Energy, Industry, Waste Recycling, Afforestation, Energy Efficiency, and Fuel Switching to Natural Gas. This is for an estimated total cost of 1200 Million US Dollar

These projects are considered as a source for attracting foreign investments, providing employment opportunities, and contributing in the implementation of Sustainable Development plans in Egypt.

#### **Roles and Responsibilities of CDM DNA**

- Setting regulations for project evaluation and approval
- Approve confirms of the project eligibility (the project is voluntary, satisfies national criteria and contributes to Egypt sustainable development, ESD).
- Promote Egyptian CDM projects among the international investment community
- Follow up CDM project implementation and contact with Designated Operational Entity (DOE)
- Issuances of letters of endorsement and approval for CDM projects
- Preparing intergovernmental agreements (memorandum of understanding) with possible investor countries or institutions for the implementation of CDM projects.

A number of projects are either already implemented or ongoing in different sectors under the supervision of the CDM DNA, these are such as:

#### **Renewable Energy**

- Zaafarana 120 MW Wind Power Plant
- Damietta Barage Mini-Hydro
- Naga Hammadi Barrage Hydropower
- Kuraymat Integrated Solar Combined Cycle Power

#### **Industry**

- Abu Qir Fertilizers N<sub>2</sub>O Abatement
- Semadco Fertilizers N<sub>2</sub>O Abatement

#### **Energy Efficiency**

- El-Nasr for Carton Cogeneration
- El Mohandes for Pasta Cogeneration
- Abou Zabaal Fertilizers Waste Heat Recovery

#### **Fuel Switching**

- Glass for Dying and Preparation
- Tourah Cement Company
- Fuel Switching at National Steel Plant

#### **Waste**

- Onyx Gas Capture and Flaring

#### **Afforestation**

- 24 Greater Cairo Ring Road Project

### **3.3 Urban Development (slum areas)**

#### **A. The National Program for upgrading and development of informal areas (slums) in urban areas**

Promotion of sustainable human settlements is one of the main actions needed to be implemented according to Egypt's Agenda 21. Thus, the Ministry of Local Development has implemented the National Program for Upgrading and Development of Informal Areas in Urban Areas. This program is one of several programs addressing the same issue which are in place nationwide.

The strategic objectives of National Program for Upgrading and Development of Informal Areas in Urban Areas include the following:

- To achieve of a balance between population and existing natural resources to ensure efficient utilization of Egypt's natural resources
- To achieve a balanced regional and urban development
- To facilitate a balanced development of habitable and non-habitable areas
- To develop new towns in desert areas to protect agricultural land

The program has initiated activities to survey 24 governorates to identify areas needed to be upgraded or totally removed. The total number of informal areas was 1175, 20% of them cannot be upgraded and should be totally removed. Efforts are currently progressing towards dealing with those identified areas.

On the other hand, and in close collaboration with the program, the MSEA is implementing serious activities with regards to slum area upgrading. These activities include; afforestation, lifting solid waste, paving of roads and the establishing of environmental awareness centers.

#### **B. The Framework Strategy for the Development and Elimination of Slums** *(Enhancing slums inhabitants' urban and living conditions through participatory planning)*

To support Egypt's efforts to improve life quality for slum dwellers, GOPP and UNDP started implementing **the Framework Strategy for the Development and Elimination of Slums** in 2005. This framework strategy aims to eliminate the existence of slums nationwide through two main approaches:

- Working with the present policies dealing with slums through international and local agencies and benefiting from their best practices.
- Building a national database for slum areas including the detailed characteristics for each slum.

In order for the above goal to be successfully achieved, the demography, environmental, social, economical and urban aspects must be taken in consideration during the planning process as they affects any development strategy for slums. The following are the main considerations which were taken into account during the preparation of the strategy:

- Building a citywide strategy and database for dealing with slums.
- Achieving decentralization in the planning process.

- Enhancing the local economical aspects through conversion of informal economical sector to formal one by enhancing products and developing markets efficiency.
- Providing services and infrastructure using unusual and new systems.
- Building local authorities capacity in order to capable for carrying out their responsibilities in the implementation of slums development projects.

In consensus with this strategy; two programmes are currently working in Cairo Governorate aiming at eliminating slums existence. These two programmes are discussed in details in section 4-3 (Programme A – Programme B).

### **3.4 Transportation and its Emissions**

Generally, transportation is a fast growing sector in Egypt, and its consumption of petroleum fuel ranks the second (after industry) among all other sectors with a share of the total final energy use by about 30.85% (*source: Egypt country profile, Johannesburg 2002*). Transportation is contributing by a considerable share in the national air pollution problems, and in specific relation to this, the country has adopted a number of policies aimed at improving the national air quality by reducing emissions from mobile sources.

Different Governmental entities (shareholders) are involved in drawing the national policies for the transport sector; the Ministry of Transport, for transport-related issues, the Ministry of Interior, for traffic planning and law enforcement, the Ministry of Petroleum, for fuel-related issues, and the Egyptian Environmental Affairs Agency under the Ministry of State for Environmental Affairs, for the environmental-related issues. Cooperation is taking place between the aforementioned governmental entities to implement such policies, like the eminent cooperation between the Egyptian Environmental Affairs Agency (EEAA), and the Ministry of Interior, and Ministry of Transport regarding reducing emissions from mobile sources and solving traffic congestion problems in major cities. Local authorities may be delegated for specific actions or implementation programs.

However, the sometimes conflicting interests between some key authorities and the decrement of some coordinated policies and strategies particularly in the development of road transport, urban public transport services, Non-Motorized Transport (NMT) and integrated land use could have always been the major barriers to **Sustainable Transport** sector development in the country. But nevertheless, with well designed actions and pilot projects adjusted to the local needs and policy environment, it is possible to gradually start to influence also the broader policy and institutional development needs. This is obviously going to happen with a concerted effort of the committed local “authorities” and by working step-by-step on the basis of concrete, successful “show cases” this will be considered as a realistic goal.

**The National Sustainable Development Strategy (NSDS)** issued in 2008 had focused on some key issues for improvement of transportation sector in the country that are in line with the general, overall policy directives of reducing emissions, solving the problem of congestion, and moving ahead towards sustainable consumption pattern in this critical service sector, these key issues are listed hereafter:

- 1- Formulate a control program for emission reduction and fuel change.
- 2- Electrification of railways to reduce fuel consumption.
- 3- Applying cost recovery system in the public transportation sub-sector.

- 4- Use of modern technical and administrative tools for better control and management of traffic flow, like the use of Geographical Information System-GIS.
- 5- Improve the quality of public transportation.
- 6- Planning and development of roads network to curb for traffic problems and improve the traffic system in general.

In response to the national commitment to achieve sustainability in different development sectors including transportation, the National policy is geared-up towards encouraging the use of clean fuel type; hence the Prime Minister had lately issued a decree banning import of any new public buses that do not work by the natural gas.

The Ministry of Transport from its side is working on achieving tangible improvements in different sub-sectors of the national transportation sector, and had put forward a number of policies, for instance in land transportation mode, it is known that the Egyptian road network consists of more than 46.000 km, the **MoT** portfolio covers about half (i.e. 22.500 km) of intercity roads and bridges (*source: Transport on the Move, 2008*). As this sub-sector is a critical, fast growing one, the **MoT** had set a number of policy objectives, one of them is to create a network of roads connecting Egypt's major cities that:

- a. Meet or exceed the international safety standards.
- b. Accommodate increasing traffic volume.
- c. Support the rapid pace of economic development.
- d. Provide easy, efficient and safe access to newly developed industrial, commercial, agricultural and residential areas.

In addition, the Ministry of Transport is adopting the policy of Public-Private-Partnership to achieve its goals in all different sub-sectors, However stricter actions regarding transportation management are still needed in order that protecting the environment and allowing for the country to progress on its development path.

As a matter of fact and despite that the country had not yet developed a national strategy for transportation, but the precursors for this had ever existed. The country has adopted a number of National Plans (NP) for different sub-sectors of transportation, for instance in 1993 a national plan for land transportation modes had been adopted by the authority for planning of transportation projects, while in 1996 another NP for the railway sub-sector had also been adopted by the National authority for railways, and a third NP for river transport had been adopted in 2003 by the general authority for river transport. The overall goal of these plans was to achieve an effective, sustainable national systems that are founded on the development of their various prerequisites embodying proper policies, legislation, institutions, human resources, technological infrastructure and supportive public awareness, and to provide transport services to all segments of the community with least possible cost.

But nevertheless, the country may still be in great demand for developing a **Sustainable Transport Strategy (STS)**, whereby initiating work through a suggested, concrete pilot projects, the **proposed** strategy, in one part, could



demonstrate the rationality, feasibility and direct benefits of selected sustainable transport actions, thereby gradually building up the broader policy support and, in another part, demonstrate the need for (and to provide) a platform for addressing the more fundamental policy and institutional development needs to facilitate their effective replication. Having a well-designed communication strategy addressing the different key stakeholders/shareholders is obviously a key to the success of any proposed programs and/or projects, the main elements of this communication strategy are expected to consist of:

1. Early involvement and awareness raising of the key public authorities about the goals, objectives and foreseen benefits of any suggested programs and/or projects, thereby securing their commitment to support implementation from the very beginning allowing for responding to specific needs and constrains;
2. Awareness raising of the targeted private sector stakeholders and the general public about the purpose and foreseen benefits of such programs and/or projects, as well as about the experiences of similar activities in Egypt and in other countries;
3. Specific marketing campaigns to promote the adoption and increasing the use of **Sustainable Transport** options;
4. Enhanced networking and information exchange between the different local entities (academic research community, environmental NGOs etc.) interested in promoting **Sustainable Transport** and protection of the environment so as to identify areas of mutual interest and possible joint actions optimizing the use of resources and efforts;
5. Networking and international information exchange so as to learn from and adopt experiences, results and best practices from similar activities in other countries;
6. Effective use of the public media such as newspapers, radio, TV etc. to bring the issues of **Sustainable Transport** into public discussion and to inform the public about such issues, as well as managing and disseminate related information and results, including pilot concepts promoted;

A back-up institutional framework of clear cut roles, and non-conflicting, intermingling responsibilities is strongly needed, However some initiatives had been previously formulated to steer-up heading towards this prime goal of **Sustainable Transport (ST)**, they were mainly represented by institutional structuring, with clear dissemination of responsibilities across different key authorities concerned with transportation sector in the country. In all such efforts and/or endeavors a partnership between the Central Government, the Governorates, local Governments, and the Public is anticipated, they depend heavily on the regional approach with the Governorates being the principal participant for the implementation of different strategy components.

For the Governorates to be able to implement their roles and responsibilities for the enhancement of transportation within their geographically jurisdictional areas, the following shall serve as guidance for taking on of their assignments:

1. Develop a strategy and work plan[s], and clearly define the roles and responsibilities for the Government, Governorates and local governments;

2. Establishing of appropriate Governorate legislation, regulations, standards to comply with the nationally-established legislation, regulations, standards and guidelines;
3. Assigning responsibilities within the Governorate to the Governorate and/or local governments for the planning, and implementation of transport management systems with full geographical coverage for all cities,
4. Developing of a work plan[s] for the implementation of the Governorate strategy which delineates the work of the Governorate and local governments,
5. Implementation of work plans within Governorates in a manner consistent with the legislations, regulations, standards and guidelines authorized by the Central Government.

### **The framework of the overall Action Plan**

There are **two** lines of action that are currently being implemented for the transportation sector, **the first** entails establishment of **Vehicles' Emission Testing**, tune-up and certification system (VET) aiming at reduction of pollutants and improvement of fuel efficiency. **The second** line of action entails the demonstration of the technical and financial feasibility of switching to Compressed Natural Gas (CNG).

### **The framework of major programs**

The following is a detailed description of the main **National programs and projects** in transportation sector that imply environmental dimensions:

- 1) **Hybrid-Electric Transportation Bus Technology:** The overall objective of the project is to introduce a viable Hybrid-Electric bus that will have significant benefits and sustainability in various segments of the country. The project is funded by the Global Environment Facility GEF and implemented by UNDP and the Egyptian Social Development Fund. The project will be applied to high priority historical sites starting with the Giza Plateau where the ancient pyramids are located.
- 2) **Natural Gas Motorcycles:** A demonstration project using the Canadian technology developed to reduce the emissions of GHG by converting two-stroke engines used in motorcycles to Compressed Natural Gas (CNG). The project will be implemented in three phases: identification of capabilities and barriers, demonstration of the technology, and a hand-over and transition to the local market.
- 3) **Ring Roads:** In order to decrease congestion inside cities and reduce travel times and consequently improve fuel efficiency and decrease pollution, ring roads are being established to avoid passing through cities. Egypt has lately started applying them to the transport sector especially for constructing highways such as Alexandria –Fayoum.

## **A. Air Emissions**

### **A.1 National Air Quality Strategy**

The poor air quality was recognized to be one of the major environmental issues for which the NEAP of 2002 recommended a series of policy and investment actions. Only one policy action related to the reduction of lead in gasoline was implemented.

Lead in gasoline was subsequently eliminated; other actions such as introducing a tax on gasoline, investing in improving Electric Public transportation networks and expanding their geographical reach and lowering import duties in new efficient vehicles were not implemented.

Other positive actions were undertaken which resulted in partial improvement of air quality; such as the introduction of natural gas in the power and housing sectors, Private cars, including taxis, have also been encouraged to switch to natural gas and the construction of the Underground, ring roads and freeways have decreased congestion inside cities, reduced travel time and consequently improved fuel efficiency and decreased pollution.

Recently, the EEAA formulated a strategy for air quality management in Egypt which was endorsed by its Board of Directors in 2002. This strategy was developed through a consultative process with national stakeholders. It mentioned the most polluting sectors as energy, transport, industry, agriculture with proposed actions for each one and could be considered as a national strategy when approved by the Government.

The ultimate objective of the National Air Quality Strategy (NAQS) is to significantly reduce the levels of air pollution suffered in many urban areas in Egypt, thereby improving the living conditions and welfare of the affected populations and reducing economic burden that air pollution imposes on the nation. From this objective, a number of immediate goals have stemmed, such as the Reduction of pollution burdens of suspended thoracic particulates in the ambient air to the maximum limit value (MLVs) as stated in Law 4/1994 of the environmental especially in density populated areas. This is done through the implementation of a set of policies and programs in each of the polluting sectors and Enforcing/ Ratifying Law 4/1994 of the environmental to obligate industrial facilities and vehicles to abide by the stated environmental standards.

### **Priority Interventions**

Each policy area is supported by several programs, which are in turn are supported by a series of interventions that provide the mechanism for overall policy implementation. The main priority actions in each sector are described below:

### **Transportation**

A number of policies are recommended for implementation in the transport section to minimize its impact on air quality, such as:

- Investing in improving Electric Public transportation networks and expanding its geographical reach/domain bound / limits.
- Circulating the vehicle emissions measurement program in all governorates.
- On-road car emissions inspections.
- Decreasing the number of cars operating with solar.
- Establishing standards of new vehicles emissions.

Programs and projects have stemmed from the above mentioned policies to aid with the promotion of the improvement of air quality; these were either in the form of the expansion or replication of current and undergoing experiences or the introduction of new concepts and ideas for projects. Examples of these are:

- Continuing the encouragement of vehicles "Use of CNG as alternate fuel program".
- Execution of the "Car emission measurement program" in Alexandria, Dakahlia and Beni Suef Governorates.
- Continuing the implementation of the "On-Road car emissions measurement program".
- Implementation of the plan to replace old vehicles in the greater Cairo.
- Carrying out a study about the potential use of tricycles (Tok Tok) within governorates.
- Continuing the project adjusting and monitoring of public buses.

### **Industry**

In order to minimize the industrial pollution, a number of policies and procedures were developed to help reduce emissions and pollution load and severity. These revolved under three main topics:

- i. Land-use planning.
- ii. Cleaner production.
- iii. Pollution control-abatement

Examples of these procedures include; relocating polluting industries away from residential areas, Spreading and encouraging the concept of eco-industrial parks, implementing cleaner production technologies and setting up special programs to control the resulting pollution of small and medium sized industrial facilities.

### **Energy**

Energy requires a package of interventions to effectively and efficiently reduce pollution. An effective and least-cost option is the gradual replacement of diesel powered light goods vehicles and minibuses with CNG-fueled vehicles, through fleet attrition. Fleet replacement would be enhanced by effective enforcement and expansion of the vehicles emission testing program that would remove older, more polluting vehicles and encourage the tune up of other vehicles when appropriate. At the same time, a gradual removal of the subsidy from diesel fuel would encourage the use of CNG as an alternative transport fuel. For such a program to be effective, the supply of CNG needs to be sufficient to satisfy demand.

### **Solid Waste**

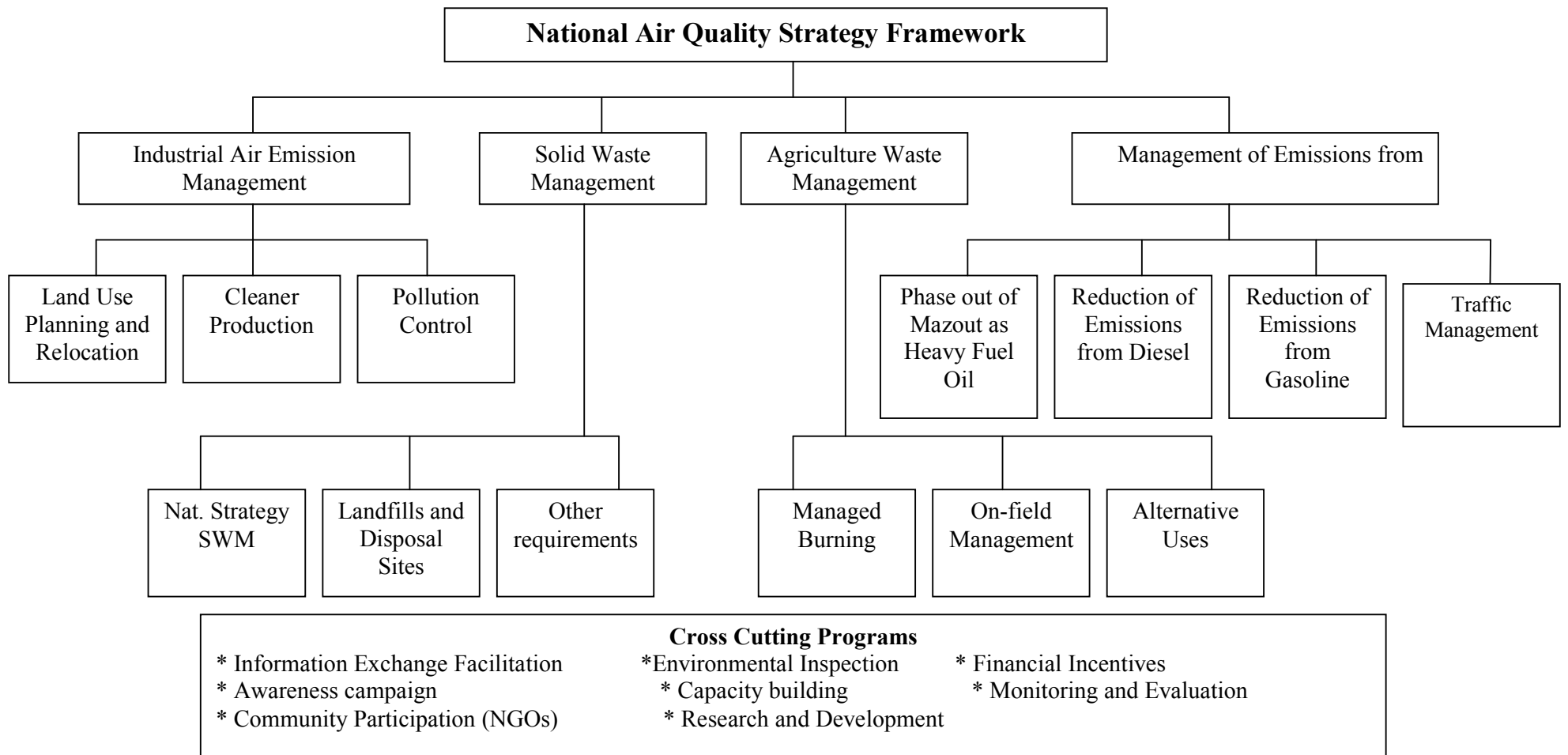
Open burning of solid waste contributes to the problem of deteriorating air quality. A major priority for solid waste is to improve the capacity of the local government agencies responsible for overseeing solid waste collection and disposal to fulfill their new role of monitoring and evaluation of contractors, as well as developing capacity in contract development and negotiation. This should focus on identifying problem locations, facilitation of collection from these areas, and the correct disposal of solid waste to prevent roadside dumping, dumping in canals, and the formation of other unofficial dumpsites. In the mid-term the development of sufficient and appropriate landfill sites is required.

Based on the NAQS; and other related initiatives, a large number of projects covering energy and environment have been conducted in Egypt over the past decade. These

have either been carried out by Egyptian organizations, by donor-funded projects or typically by a combination of the two. Examples of these are briefly described below:

- For environmental benefits, all power plants built during the last decade were dual fired to enable substitution of heavy fuel oil by natural gas, and the Ministry of Electricity and Energy elaborated a continuous program for rehabilitating old generating units by ones of higher efficiency. Natural gas utilization reached 99% of total fuel for all power plants connected to the gas grid. The efficiency of the transmission and distribution systems has been improved through a program for reducing losses within these networks.
- Private cars, including taxis, have been encouraged to switch also to natural gas. By the end of 2001, 50 public and municipal transportation buses and 51,000 cars had been converted to natural gas since 1993 using 250 million cubic meters of natural gas.
- With the assistance of USAID-CAIP, the first vehicle emission testing, tune-up and certification system (VET) aiming at the reduction of pollutants and improvement in fuel efficiency is operational in the Governorates of Qalyobia and Giza where more than 360,000 vehicles were inspected. In accordance of the Ministry of Interior, 85 percent of the inspected cars are complying with the emissions standards. VET will be expanded in Alexandria, Dakahlia and Beni Souef Governorates.
- The second Greater Cairo underground Metro line is currently in operation and a third line is under preparation. The underground-electrified mass transit system is expected to decrease travel times, decrease pollution and encourage users of surface modes to shift to this fast transportation facility.
- The Canadian International Development Agency (CIDA) provided grants for the conversion of the polluting brick factories of Helwan to natural gas.
- Under the Egyptian Environment Policy Program (EEPP), USAID provided technical assistance to 17 Energy Saving Companies (ESCOs) which outsourced its energy services to an outside company. Projects are undertaken in partnership with financing upgrades in energy reception, distribution, and in some cases, usage, and manage the power infrastructure for its customer. The benefits for the customer company are cost savings as a result of increased efficiency in energy consumption and usage.
- The World Bank financed, under EPAP, a blend of loans and grants to 11 projects to reduce air pollution in the fertilizer, chemical, refinery, aluminum and cement industries.
- UNDP through the Global Environment Facility (GEF) is assisting in the execution of the Fuel Cell Demonstration Project in eight buses as well the introduction of the Hybrid-Electric Transportation Bus Technology in high priority historical sites starting with the Giza Plateau where the ancient pyramids are located.

- MSEA and the Ministry of Agriculture have set up a series of collection trials on the agricultural residues, in an attempt to find a solution for reducing the effect of the “black cloud” such as central collection and densification (shredding and baling) mainly for animal feed. The Ministry of Local Development has also worked with MSEA to reduce pollution from smelters, cement plants, and bricks manufacturing. A cost benefit analysis on these and other proposed measures indicates that rationalized burning appears to offer the potential to significantly reduce damage costs at low cost.



**Figure 6:** National Air Quality Strategy Framework

## **A.2 Environmental Information and Monitoring Program (EIMP)**

The EIMP was established in 1996 and aimed at establishing national environmental monitoring program for ambient air and coastal waters. A reference laboratory was established to assist contracted national monitoring institutions in the development of quality assurance systems. An important output from the program is the environmental quality data and database systems which will form an integral part of EEAA's Environmental Information Center.

The EIMP Air pollution-monitoring program has been established under the Environmental Quality Sector-EEAA in order to have a view of the present environment and to undertake the monitoring of ambient air by establishing a modern national air quality network. Data are collected using automatic on-line monitors and variety of sampling equipment. A total of 42 sites covering all over Egypt have been selected through several site visits and studies. An additional number of 10 to 20 sites are being used for simplified passive sampling of SO<sub>2</sub> and NO<sub>2</sub>. The measurement network, instruments and data transfer have been established in 1998 and were finalized in 1999.

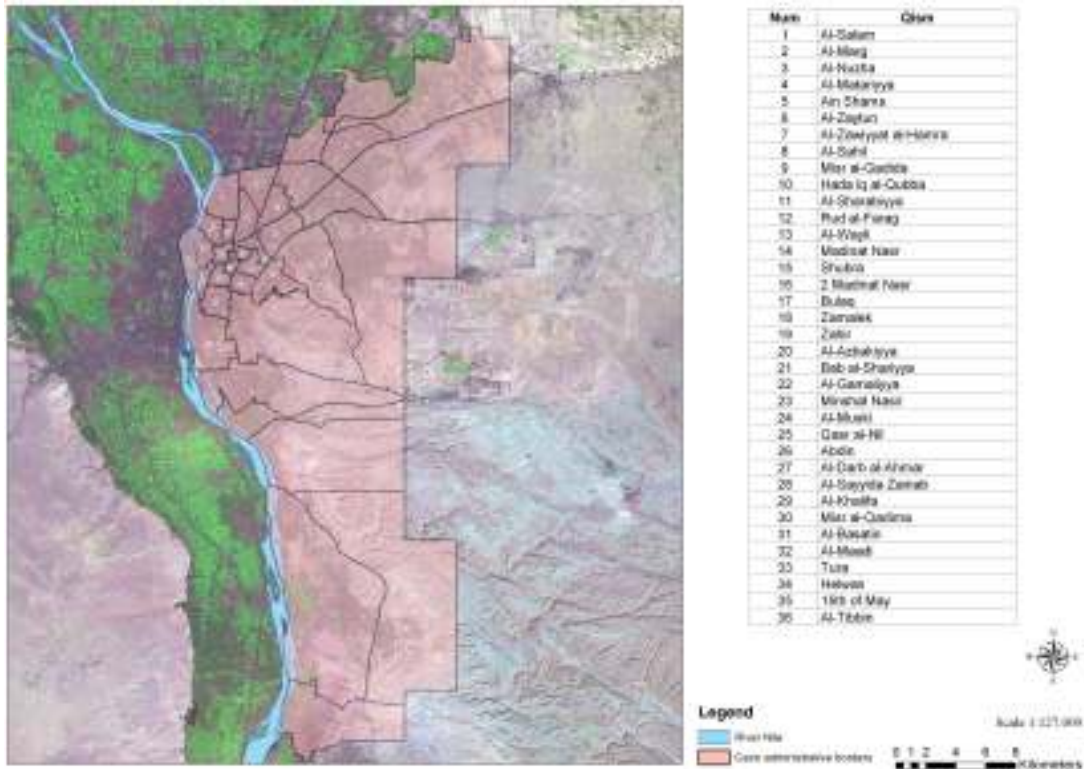
The design of the EIMP Air Quality Monitoring network includes:

- Data collectors, sensors and monitors.
- Data transfer systems and data quality assurance/control procedures.
- Databases.
- Data distribution systems.

### **4. Cairo Local Context**

Cairo is the capital of Egypt; it was founded in 969 AD as the royal enclosure for the Fatimid caliphs. Egypt's capital is located at the top of the Nile River in the north of Egypt, having the area of 3126 km<sup>2</sup> and forming 36 districts with a population of 7629.9 thousand inhabitants. Cairo is considered to be the most populous metropolitan city in Africa and one of the sixteen populous metropolitan areas in the world.





**Figure 7: Cairo Governorate Map**

Cairo is considered to be the center of Egypt's economy, and as a consequence, it is a rapidly expanding city containing different industrial, commercial and urban activities. These activities led to many environmental problems, which require serious interventions to be solved. Thus, a number of policies, strategies and action plans were put in place aiming to reduce the environmental impact of these activities and improving Cairo environmental conditions.

In this section of the report, the strategies, programs, action plans and/or projects related to the four thematic areas in Cairo governorate will be addressed.

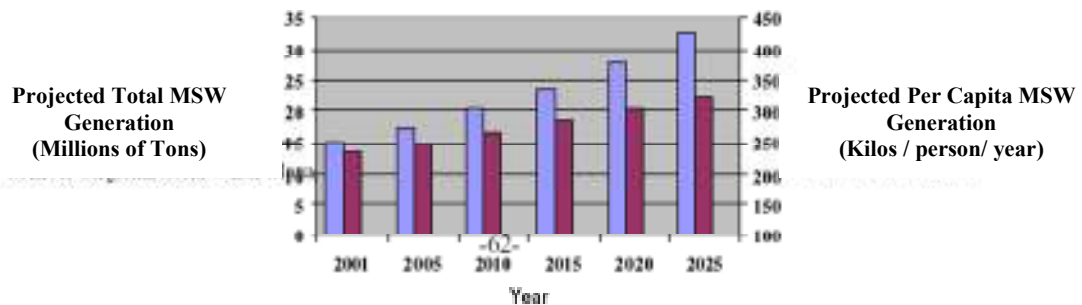
#### **4.1 Municipal Solid Waste Management**

A major priority for Solid Waste Management in Cairo is to improve the overall management of solid waste in the city, and trigger an effective, cost-wise system through enabling local governmental agencies to fulfill their role. This has focused on identifying problem areas, allowing for long-term, sustainable solutions that radically deal with eminent problems. Delineating responsibilities of different stakeholders and empowering the governorate of Cairo for the implementation of all SWM activities in various localities under their own jurisdiction was the key element of achieving a sustainable, effective system for the city. This responsibility can be presumed through their own infrastructure or indirectly by private sector contracting.

Until autumn 1998, the Government of Egypt did not have a national strategy for Solid Waste Management (SWM), and this has hampered the adoption of any local strategies by the respective Governorates. The local governorates had relied on their

scarce public fund to improve the different components of Solid Waste management in their own local context. To enable local Governorates to take on their duties and in order to provide fund for the implementation of the system for each and every local Governorate, the central Government had provided a subsidy for SWM system amounting to 10 million/year for the last ten years, in addition to the proceeds of a 2% monthly levy on the controlled rental value of housing units, which did not exceed LE 1.0-1.5 per year. However, such amounts were totally insignificant to properly and efficiently manage the system.

In 2000, the country had established its national strategy for SWM, and within the framework of this national strategy the local Governorates are entitled to prepare their own local strategies to meet their pressing needs. The major outcome from the implementation of the national strategy will be to establish an Integrated Municipal Solid Waste Management system (IMSWM) in different governorates- a philosophy of management that addresses solid wastes as natural resource- that is founded on the development of its various prerequisites embodying proper policies, legislation, institutions, human resources, technological infrastructure and supportive public awareness, and to provide Solid Waste Management services to all segments of the community in an environmentally sound manner & with least possible cost, and that what the local Governorate of Cairo is eager to achieve in the coming years, and is currently in a process of establishing a local strategy.



**Figure 8:** Projected Waste Generation 2001 – 2025  
**Source:** National Environmental Action Plan (2002-2017)

**Key policy directives** of the local strategy on Integrated Solid Waste Management could be highlighted in the following points:-

- 1- Management strategy in urban areas with private sector participation, backed with an appropriate legal framework, with a cost-recovery system based on a full cost accounting and with incentives for the local private sector and local communities;
- 2- Extending solid waste management collection and disposal to different districts across the city, by involving local contractors to carry out community development projects for the production of recyclable products, and compost from municipal solid waste;
- 3- Developing and raising awareness of the public for the proper disposal of municipal solid waste.

- 4- The provision of an incentive system by the local government to enable a local market for the production of recyclable products from municipal solid waste.
- 5- Provision of technical assistance and guidance through international donors in a coordinated manner to fill in the knowledge gap, and strengthen the capacity of Cairo governorate in planning, implementation, monitoring and follow up of SWM services. This has allowed for international and local private operators to provide integrated solid waste management services, including, collection, and transportation, treatment, and disposal services in sanitary landfills for municipal, health care and industrial non-hazardous waste on a Design-Build-Operate (DBO) basis.

The broad objectives of the local Municipal Solid Waste Management strategy of Cairo is to eliminate uncontrolled accumulations of solid waste, provide an efficient storage, collection, transfer and final disposal, through a number of policies including recycling, and sanitary landfilling- in a manner pursuant to natural resources conservation and public health and environmental protection.

Specific objectives are based on the following key elements:-

1. Improve current collection efficiency, where the basic element for collection encompasses raising the collection efficiency incrementally.
2. Maximize recovery of resources, in order to maximize cost recovery, as by establishing of composting plants in areas where land is scarce or where there are technical or environmental constraints towards the use of sanitary landfills.
3. Enforce legislation.
4. Developing manpower in Solid Waste Management.

A priority for solid waste management in Cairo is to improve the capacity of the local agencies responsible for overseeing solid waste collection and disposal to fulfill their role of monitoring and evaluation of contractors, as well as developing capacity in contract development and negotiation. Identifying problem areas (or hot spots), facilitation of collection from these areas, and the correct disposal of solid waste to prevent roadside dumping, and formation of other unofficial dump sites are the major line of action in the city.

The local municipal authority (or companies working under its auspices) is holding the prime responsibility for the ownership and operation of a system for Solid Waste Management to ensure the adoption, where appropriate, of state-of-the-art, management techniques e.g. recycling, and materials' recovery.

### **The framework of the overall Action Plan**

The framework of the overall local action plan is based on completing the currently urgent initiative of removing historical accumulations and establishing a sound, secure and cost-effective SWMS, while attaching an economic value to waste streams by encouraging the four plausible "R".

The local action plan encompasses the following key elements:-

- a. Maximize utilization of available resources.

- b. Full cost recovery of services to ensure sustainability of high quality service.
- c. Institutional development of appropriate operating systems with maximum resort to privatization.
- d. Public awareness campaign to increase community participation.
- e. Upgrading and enforcement of legislation.

### **The framework of major programs**

Major programs within the local action plan include:

- a. Identification & acquisition of lands for treatment, composting & sanitary land filling. Landfill sites were adopted as the most appropriate disposal mechanism for municipal solid waste. Subsequent Design-Build-Operate (DBO) contracts were competitively awarded to Spanish, Italian, and Kuwaiti operators for three out of four districts in Cairo.
- b. Establishment of some new Solid Waste Management (SWM) facilities to upgrade and extend service coverage.

## **4.2 Industrial Development**

Industrial development has always been a major direction for Cairo governorate, and for GCR by large. Cairo is considered one of the major industrial cities in the country as it contains considerable number of industrial clusters. It is surging with a number of industrial activities that have a leading role among other activities in providing job opportunities and in attaining economic growth. The governorate makes a sizable contribution to the nation's economic engine. Its share the national economy (GDP) was 31% in 2006. Factories and industrial zones have a share of 10% of the total land area in the main agglomeration of the governorate (Ministry of Trade and Industry, 2007).

Along with industrial development came pollution and other environmental problems that have and still face and challenge the governorate. In addition to these, land use problems; mainly of intermixing residential and industrial activities of various sizes; are casting their shadows on this issue.

Cairo governorate has started its efforts to tackle these serious problems early through several legal, institutional and technical approaches. The main objectives of these efforts are summarized below:

- Re-distribution of some industrial activities located inside the old residential areas of Cairo to the official, established industrial areas, and to create an essential, substantial role for those industrial areas.
- Regional redistribution of crafts' aggregations outside the residential and urban areas of the city.
- Encourage the settlement of some industries inside legal industrial zones.
- Increase awareness among investors for sustainable behavior in industry, and promotion of the sector's competitive advantages.

- Enforcement of the national legislation dealing with industrial pollution at large, and promotion of pollution prevention and abatement technologies.

The major aim of these directives is to achieve progressing along the development path while protecting the environment. To translate these directives into actions, the Governorate in collaboration with EEAA and other shareholders have prepared a number of plans along the set directives.

Priorities have been given to relocate polluting industrial activities which exist within residential areas or within unspecified locations. These include not only industrial establishments that cause environmental pollution but also other activities that threat human health such as pig yards.

Several Decrees have been issued by the Governor of Cairo to administratively organize the implementation of these plans. Examples include the Decrees number 260 for 1998 and number 80 for 2005. In addition, efforts are currently underway to relocate smelters and other small and medium establishments.

Some of the previously mentioned activities and initiatives have been completed, while others are in different stages of the planning process. Finding the right place to re-locate industries is a real challenge given the restricted space and competition from other land uses. Allocating resources is yet another major challenge in addition to the lack of awareness in part of the investors and facilities' owners.

Meanwhile, as the awareness towards sound planning of industrial activities grows in Egypt, strategic national and regional approaches are being developed. During the past year, a ***National Framework Strategy for Industrial Development*** has been developed and is currently awaiting official adoption. In parallel to this, the Japanese International Cooperation Agency JICA had prepared with the local authorities a draft ***Strategic Urban Development Master Plan for Sustainable Development in Greater Cairo Province*** that addressed industrial development specifically; among other components. Once these planning documents are adopted, more organized efforts will be required to deal with current and future problems related to industrial development within the major urban settlement in Africa.

### 4.3 Urban Development (Slums)

Within the context of the **National Program for Upgrading and Development of Informal Areas in Urban Areas** and in order to achieve sustainability in the urban development sector, Cairo governorate has launched the ***“Planning and Upgrading of Manshiet Nasser District”*** project with the support and funding of GTZ organization. The aim of this pilot project is to rehabilitate the informal settlement of Manshiet Nasser (located East of Cairo) which is considered as one of the most dense (400 inhabitants/acre), over populated (350 000 inhabitants) and deteriorated areas of Cairo.

The main objective of the project is to develop an integrated urban and stable plan for the settlement that takes into account the following factors:

- nature and location of the area;
- topography and contour variations;
- requirements of the potential inhabitants;
- the need for green areas;
- an integrated road network linking the settlement to the main neighboring areas and roads; the preservation whenever possible of old buildings still in good conditions.

The project is being implemented on site according to the proposed phases, the first of which was completed at the end of 1999. The project includes construction of 6000 housing units, hospitals, schools, etc. It is worth noting that the project aims at enforcing the contribution and participation of all partner groups as an approach to execute the project and achieve its goals through initiating and sustaining a healthy dialogue among different stakeholders (private, public, inhabitants, etc.) by applying an implementation mechanism for Manshiet Nasser.

Moreover, Manshiet Nasser then started in action its **Local Area Action Plan (LAAP)** in the period 2005 to 2007. The goal of this action plan was to provide improvement to the public administration and to satisfy the basic needs of the poor population. This action plan started by categorizing its problems; legally, social and culture, environmentally, education, health and economic, and then offering the solution for these problems.

One of the important actions which were submitted by the **LAAP** was the '**Cleaning of Our District**' project or '**Nazafet Hayena**' in the year 2006. This project was done by the contribution of many entities and the inhabitants of the districts which they called themselves the 'Street Rangers'. The project was divided into three phases and it had the following results:

- Direct result: the disposal of the municipality solid waste, as an attempt to eliminate Manshiet Nasser solid waste problem.
- Indirect result: raising the environmental awareness of the inhabitants and school students, to participate in cleaning their surrounding area.

To foster its efforts directed towards the problem of urban slums; and in close collaboration with **the Framework Strategy for the Development and Elimination of Slums**; Cairo is currently working in two other programs related to the urban development sector, these two programs are:

- **Program A: *The Containment of Greater Cairo slums.***

For this program, the Ministry of Housing through the GOPP started implementing the program in 2006 as a part of Greater Cairo 2050 integrated urban development strategy. The main objective of this program is to eliminate the existence of slums by the year 2027 by having the following actions:

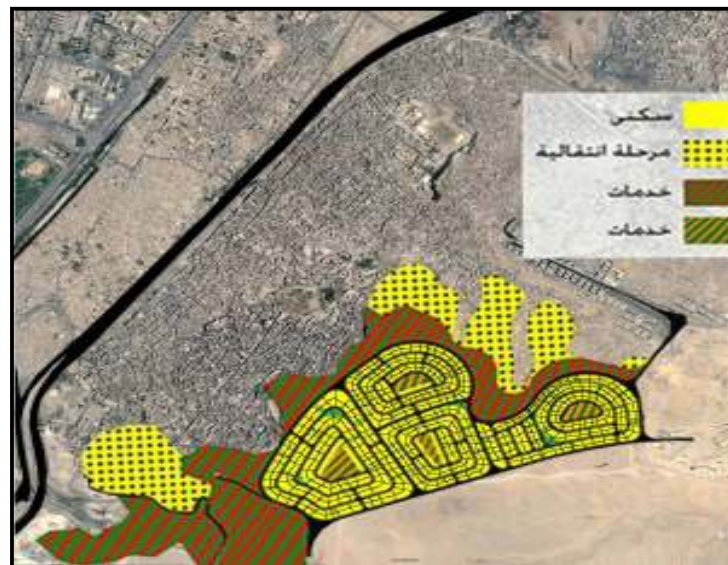
- Eliminate the appearance of new slums.
- Controlling the city future direction for any urban extensions.

- Planning and upgrading of existing slums by providing services and infrastructure for slums dwellers.

The planning process of the program includes the following actions:

- Identify the future needs for housing based on the expected increase in slums population
- Identify the current and future needs of the services
- Identify the needs of job opportunities
- Identifying the needed areas to be added for the accommodation of the expected populations
- Determine land uses for the new added areas

As for Cairo governorate, the planning process started by 31 slum areas in Cairo north, middle and south sectors, including for example: Ezbet El-Haganna, Manshiet Nasser, Ezbt Abu Qarn, Ezbt El-Walda and El-Maasara.



**Figure 9:** Manshiet Nasser Master Plan

**Source:** The Containment of Greater Cairo slums, GOPP, 2005

- **Program B: *The Urban Development Program.***

For this program, Cairo governorate gave its first priority for the development of slums. This program had settled an integrated strategy for dealing with slums, having the following objectives:

- Implementation of programs and pilot projects through scientific planning bases.
- Adopting detailed urban planning for the slums eligible for development, and providing services, new land uses according to the inhabitants needs.
- Saving environment through the relocation of industrial polluting activities away from residential areas.

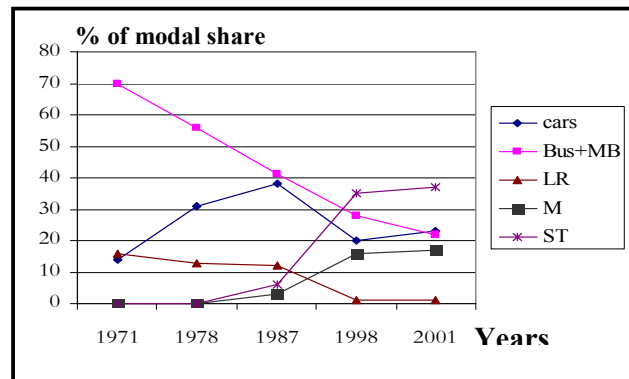
- Encouraging investments in the housing sector in new areas to alleviate crowding in slums.
- Emphasis on the principle of no building without license and no license without planning.

Meanwhile, the priorities for the development of slums are set according to the characteristics of each slum; such as population, area, urban deterioration level, growth rate, slum location and the economical land value. Thus, Cairo governorate started its **action plan** according to the previous priorities through identifying slums eligible for development (e.g. Ezbt El-Walda, Massara, El-Nahda and Manshiet Nasser, etc); or which require re-planning (e.g. Hekr Abu Doma, Ard El-Torgoman, Ezbt Bekhit and Zenhom). The total numbers of slums which are finally included for development and re-planning were 56 slums, while the total numbers of slums which are in the process for the detailed planning process are 12.

In order to institutionalize the process and ensure its sustainability, Cairo governorate has established the “*Slums Development Unit*” in 2007, which is directly affiliated to the governor. This is offering capacity building for the unit to be capable for carrying out its responsibilities, which are mainly coordinating efforts between different slums development stakeholders and building slums data base for ensuring planning efficiency.

#### 4.4 Transportation and its emissions

The transportation problem in Cairo has a dual face of increasing emissions’ loads from traffic far beyond the allowable limits stated by the law, and the increase in travel time taken by Vehicles due to road congestion, and both will cause a potential loss in the national economy, either directly or indirectly. In general, Cairo suffers immanent difficulties in movement of people and the flow of traffic; this is caused by the incredible and unexpected increase in the number of vehicles of various kinds. A major priority for transportation sector in Cairo is to improve the planning capacity for an effective, cost-wise system through enabling local government agencies responsible for overseeing transportation planning to fulfill their role. This should focus on identifying problem areas, allowing for long-term, sustainable solutions that radically deal with the eminent problems





**Figure 10:** Evolution of modal shares (%) in Greater Cairo Area from 1971 until 2001 from four O/D Surveys (LR = Light Rail / Tram, M = Metro, ST = Shared Taxi)  
(Source: Ali S Huzayyin, “Analyses of the Evolution of Travel, Transport System and Urban Activity for Sustainable Short/Long Term Transport Policies; with Reference to Greater Cairo”, Official Proceedings CD of the 10th World Conference on Transport Research, WCTR 10, Istanbul 2004, Elsevier Publishers, Amsterdam, 2005)

The vision of Cairo Governorate-regarding promoting transportation system in the city, to achieve the prime goal of protecting environment while progressing with the development path- is actually based on a number of directives, and/or motives as listed below:

- 1- Decrease traffic congestion at major axels in the city, and decrease the travel time taken by vehicles in a sustainably acceptable manner.
- 2- Decrease the number of road accidents by creating a traffic safety system.
- 3- Encourage the use of public transport system by means of augmentation of both efficiency and standards of the service.
- 4- Develop a rational attitude that enables the efficient use of transportation infrastructure.
- 5- Increase awareness among public for sustainable behavior in transportation sector by encouraging public participation.
- 6- Enforcement of the national legislation dealing with traffic and transportation at large.
- 7- Promote the efficiency of roads’ infrastructure emphasizing on road maintenance and promotion.

This has constituted the basis for Cairo short and medium-term local strategy which had been formulated and adopted in 1997. A continuous up-date for the framework of that strategy is always done every 1-5 years depending on the rate of achievement of certain goals and objectives, whereby new objectives are replacing the old accomplished ones. The last up-date of the strategy framework is currently being done, and expected to start taking effect from the fiscal year 2008-2009.

The general framework of the short and medium-term strategy for Cairo is based on a number of fundamental axes, being listed hereafter:

1. Open-up of new traffic axes, especially transverse axes to absorb traffic movement and shift it from the city center where congestion is customary occurs.
2. Development of current traffic axes to be able to take in the present traffic movement in a rational way.
3. Securing pedestrian movement, by making bridges, underground tunnels.
4. Solving car-parking problems, through installation of multi-story garages, parking plaza, or garages at the basement of newly established residential buildings.
5. Diminishing request on transport trips.

6. Integration of mass transport means, by installing bus, mini-bus stations close to subway (Underground Metro) stations.
7. Studying traffic impacts of big projects, and their implication towards the aggravation of the problem of traffic congestion.

To allow for the achievement of these strategic goals and objectives set out by the local strategy, an enabling institutional structure had been formulated represented by a Higher Committee for Greater Cairo Transportation Planning, which has been established by a Prime Ministerial Decree. The committee is responsible for the overall planning of transportation in Greater Cairo region including overseeing planning and establishing priorities, follow-up on the implementation of transportation projects. This higher committee had figured out some sort of action plans to promote transportation system in the city mainly represented by formulation of a master plan for transportation in greater Cairo region in November 2002, that had been prepared in cooperation with the government of Japan; “Japanese International Cooperation Agency” (JICA). The Master Plan addressed the importance to relieve pressure from central areas and allowing for creation of some socioeconomic activities in some other new areas, the tool for accomplishing this is: to develop a sort of new communities in the Eastern Wing of Greater Cairo, which will be the key element to mitigate diseconomies as a result of excessive concentration of the socioeconomic activities in central parts of the city. It also proposes to provide a reliable public transport system in East Wing Corridor, by upgrading the existing Suez Line as part of the suburban rail system, and developing a public transport system within the West Wing Corridor, linking central Cairo with 6th of October City, and formulate a traffic management and inter-modal facility development plans.

This transportation master plan had identified a number of programs and/or projects to be implemented in the different administrative sectors of the city. The plan addresses the multi-modal and integrated transport needs of Greater Cairo over the next 20 years, and recommends a number of projects including human-ware and software projects as well as hardware components. The master plan had identified in consultation with the Higher Committee for Transport Planning and the city local authorities two top priority programs (a number of five projects under those programs had been identified and ranked as top priority projects).

**The two core programs were:**

1. *Program A: Strategic Corridors, Areas Transport Management and Development Program*, with the objectives of development of a public transport system within the East-West Corridor.
2. *Program B: Cairo Transport Authority (CTA) Transport Improvement Project in East Sector of Cairo.*

*Under each program a number of projects had been identified as follows:-*

Projects identified under program A included the following:

- **Public transport connections** between Cairo and 10th of Ramadan City, as well as 6th of October City (termed the East Wing and West Wing, respectively); and the
- **Traffic management techniques** along major roads in Cairo.

Projects identified under program B included the following:

- Improvement, upgrading and modernization of Heliopolis Metro via introduction of a *modern Light Rail Transit (LRT) system* termed **Supertram Line**; and,
- **Organizational restructuring** of Cairo Transport Authority (CTA), develop a human resources training program; and, define the structure as well as staffing needs of the super-tram organization. In this program, an inter-modal view on public transport has been converted into an integrated system that simultaneously addresses *hardware, software* and **human-ware** components, at the **hardware** level, the elements in program-B focus on the technology and alignment of Supertram Line-1, as well as siting of terminals and stops. Interlinking the services of the various modes and operators, in particular the integration of CTA bus and Super-tram Line-1, constitute the **software** component of the analyses. Program B also addresses the **human-ware** component when it formulates plans and recommendations for the organizational as well as institutional reforms of the CTA and proposes the framework for a sustainable and dedicated training program linked with, on the one hand, the actual realization of the super-tram concept and, on the other hand, the proposed structural reform of CTA.

In addition to these programs and projects, the Central Government and Cairo Governorate have embarked on a number of initiatives to address and manage the problem of transportation and its impact on air quality. This includes the following:

- The Prime Minister has issued a Decree to ban import of diesel-engine power buses, and encouraging import and use of Natural Gas power buses.
- The city cab project aimed at reduction of Vehicles' emissions from the ordinary and traditional fare-cabs roaming streets night and day.
- Refurbishment of old taxis (and replacement when necessary by new ones), for a number of 1000 cabs in collaboration with ministry of finance as a first phase that will be succeeded by another 40.000
- Revocation of cars' licenses having a manufacturing date way back a certain date.
- Encouraging, and improving means of mass transit, by proposing specifications and a code of conduct for cars and the public transport in general pursuant to the sustainability concept.
- Encouraging use of private cars run by 1000 cc power engine to decrease the use of fuel and pollution loads.
- The Cairo Governor's Decree of banning trucks of all sizes to ingress the city during rush-hours. This intervention has been dually reflected on easing traffic flow

and improving air quality, which has been depicted from the collected data by the EIMP program.

- Establishment of a committee to study and analyze the problem of traffic bottlenecks.
- Vehicles' emission Testing program, initiated by Cairo Air Improvement Program (CAIP) that will be continued on the basis of private sector partnership, as it is planned to establish a number of 10 new Vehicles' emission Testing centers.

#### A. Cairo Air Improvement Project (CAIP)

Urban air pollution is an environmental challenge to Egypt's economic development, to the welfare of its citizens and visitors, and to the survival of its ancient treasures. The Government of Egypt committed itself to solve the growing problem of air pollution in the early 1990s. Since then, the United States has joined forces with the MSEA and its technical arm, EEAA, the Ministry of Petroleum, and the governorates of Cairo and Qalubeya, as well as the private sector. Their mutual goal has been to develop institutional and technical strategies for improved air quality. The main focus has been to reduce the emissions that have proven to be a significant health risk to Egyptians.

In 1997, the Government of Egypt and the United States initiated the \$60 million Cairo Air Improvement Project to reduce vehicular emissions, total suspended particulates and lead, and to establish long-term efforts at reducing air pollution through demonstrations and pilot tests of alternative technologies, increased public awareness and training.

One joint intervention to improve Cairo's air was the introduction of a program for vehicle emissions testing, tune-up, and certification to improve fuel efficiency and reduce exhaust emissions of gasoline motor vehicles. The construction of the first emissions testing station of its kind in Africa was completed in 1999 and now serves as a model for future stations.

The project has also promoted municipal buses' use of cleaner, more efficient compressed natural gas in place of diesel fuel. This step has the effect of both reducing emissions and improving overall vehicle efficiency. Forty-four of 50 prototype natural gas buses are in revenue service with Cairo's municipal bus fleets. Fueling equipment for the 30 natural gas fueling stations in Greater Cairo has been procured to service the growing fleet of 40,000 natural gas-powered vehicles.

Reducing the concentration of airborne lead in and near lead smelters and moving these industrial plants away from populated areas is a major initiative to protect the health of Egyptians. All four lead smelters in the densely populated Shoubra El Kheima area have been closed.

Through the Cairo Air Improvement Project, a 36-station air quality monitoring network has also been established. In addition, a computerized air pollution early warning system for Greater Cairo has been established within EEAA.

Follow up activities are continuing in Cairo through promoting the use of natural gas

in public transport vehicles and in taxi fleet. Other initiatives along the same path are discussed under transportation sections.

## **5. Analysis of Thematic Areas**

### **5.1 Solid Waste Management**

Waste is generated by almost all economic activities, and has many impacts on the environment, including pollution of air, surface water and groundwater. Poor waste management causes risks to public health and the environment while at the same time reducing the demand for natural resources.

Better management of waste by ensuring higher standards at waste facilities, more effective waste prevention initiatives and increasing reuse or recovery— can result in a considerable reduction of direct emissions. Reducing the amounts of waste being generated across all economic activities requires a holistic approach for which SCP is particularly suitable.

#### ***Current situation***

A strong institutional framework is backing-up management of solid waste in Greater Cairo region, where a ministerial committee for solid waste management had been established in 1999, co-chaired by EEAA and the Ministry of Local Development and comprised representatives from the Ministry of Health, Ministry of Housing and the Social Development Fund. The committee has managed the preparation of the national program for solid waste management presented to the Cabinet of Ministers for endorsement. A technical secretariat had been established by a Ministerial Decree in 2001 to follow-up on the implementation of the integrated solid waste management program, including rehabilitation of public disposal sites, supervising the selection of landfill sites in cooperation with the concerned Governorates, and coordinating funding sources. Ideally the secretariat has to oversee the development of an enabling legal framework to underpin the contracting out of services to the private sector and the development of a clear regulatory framework that can be used by the local authorities as contracts are implemented.

#### ***Zabaleen system***

The Zaballeen have had a traditional role as a garbage-collecting community in the old city of Cairo. The garbage collection system has depended on door-to-door collection, and the collected waste usually has been transported by donkey-drawn carts (however such transportation mechanism has been gradually replaced by mechanized vehicles).

The original garbage collectors of Cairo were actually a group called the wahaya (people of the oasis) who came from the Dakhla oasis in the early 1900's and settled in an area called Bab El Bahr in down-town Cairo. Back in the 1970's, when the original Moqattam settlement was founded, family-owned donkey carts had collected garbage along routes allocated to them by the wahaya. Traditionally men collected the garbage (taking their younger children with them to watch their cache as they worked), bringing the solid waste back for sorting by women and girls in the middle of their homes.

Under the auspices of Cairo Cleansing and Beautification Authority (CCBA), the “zaballen” had earlier granted the right to collect the majority of solid waste in Cairo, but the value of their garbage collection system had always been taken for granted, and as such they were seen as a primitive community incapable of, or even uninterested in, attaining the basic amenities of urban life.

There was a long standing experience in Municipal Solid Waste recycling within the context of the “Zaballen” system, which had been in operation for more than 60 years in larger Egyptian cities like Cairo. The collected wastes were transported to Zaballeen settlements where recycling is to be accomplished either by hand (of the recoverable materials, like paper, plastics, glass, metals, and cloths) or processing of recoverable materials like:

- **Paper**, which is sorted out into two categories draft paper and carton paper and each type is baled independently using primitive presses. The bales are then transported to paper mills.
- **Glass**, which is sorted out into white, green and amber.
- **Plastics**, are sorted out into various categories (thermoplastics and thermo sets), where the latter are classified for direct utilization while thermoplastics are further processed (milled and steamed) to the form suitable for direct reuse in plastic manufacturing.
- **Metals**, where tin boxes are manually cut by special knives and flattened to a form ready for baling.

After separating out recyclable and organic materials, the sorted garbage was then passed onto various enterprises, owned by zaballen families for eventual resale.

While maximum recovery was achieved at Zaballeen settlements, aesthetics and hygiene at their settlement areas were unacceptable. It was estimated that in Cairo over 30% of the Municipal Solid Waste has been recycled by the “Zaballen” at that time.

#### ***Privatization of Municipal Solid Waste Management System: (Private foreign companies)***

The Governorate of Cairo had ratified contracts with a number of private companies (either national or foreigners) to provide a number of essential services including cleansing, production of compost, construction of sanitary landfills, and construction of treatment units for hazardous medical wastes. Each and every company had officially received its assigned jurisdiction according to a contract to start delivering the required services, those companies are:

- **AMA Company** has responsibilities over both northern and western zones.
- **F.C.C Company** has responsibility over the eastern zone.
- **ECARU Company** has responsibility over the southern zone.

A number of impediments had been experienced with those foreign companies in delivering the required services, both of AMA and F.C.C companies- they did not provide sufficient information and/or monthly reports regarding the follow-up on conditions at their areas. However there are some positives represented by the

development and improvement of composting factories at 15th of May of the Southern zone by ECARU Company.

The Governorate of Cairo- represented by Cairo Cleansing and Beautification Authority (CCBA) is systematically review terms and conditions of the contract with those companies to curb for negatives appeared through the implementation of the system on ground, where recently revision and re-wording of the terms and conditions of the contracts had been devoted to specialized company to re-balance interests and benefits between different contracted parties.

#### ***Fees collection system***

Fees being collected from the benefices are subject to addition on the electricity bill, that being classified according to some categories varies from residential to commercial. Sometimes even within a single category there are variations according to the living standards, as for the residential category; the amount due payment each month per flat in slum areas for instance varies from 3-4 L.E, whereas it is in the order of 5 L.E in areas of moderate living standards, and of about 8 L.E in high class areas. The collection of fees from the commercial enterprises is subject to a higher category that starts at 20 L.E per unit (i.e. shop) up to about 30 L.E.

#### ***Cost recovery***

The Municipal Solid Waste Management System in the city of Cairo is partially a cost recoverable system, as sometimes the revenue coming back through the fees collection system are enough to cover the expenses needed to sustain the system, and sometimes not. But in case there are financial feeblenesses, they are normally covered at the outset through the Governorate's duty fund, and if it is not sufficient, then the Ministry of finance should come in between to cover any financial fall short.

#### ***Solid waste systems currently present in Cairo include***

- a) The governmental system operated by the municipalities or by special agencies dedicated to cleansing and beautification; Cairo Cleansing and Beautification Authority (CCBA), through sub-contractors belong either directly to the local authority, or those working under the full jurisdiction of the local authority. The municipalities are also responsible for treatment or disposal of collected solid waste.
- b) A formal private sector, represented by a number of capable, well-experienced foreign companies.

Over the years, the generation of MSW is continuously increasing with the progress of urbanization, concentration of population and economic and industrial development in GCR. Cairo alone generates about 10,000 tons/day of solid waste. Of this quantity, only 7000 tons are collected (70%); leaving 3,000 tons to accumulate in the streets or to be open burnt with evident impacts on air quality and human health. The total amount of recycled waste is considerably low when compared with the generated amount. It is estimated to be about 210 ton/day.

When the problem of other waste streams are added to MSW (i.e., Construction and demolition wastes and different types of hazardous waste) the problem of solid waste management appears aggravated.

Dumping of Municipal Solid Waste in open or controlled dumps has been the widespread disposal technique in Cairo for many years and is still currently applied in many areas. The Governorate has adopted a more environmentally effective policy regarding disposal of Municipal Solid Wastes represented by construction of sanitary landfills. The Governorate had already established a number of these sanitary landfills in both the Eastern and Southern zones, which are currently ready for operation, and is planning to establish another number of these sanitary landfills in both the northern and western zones.

Cairo governorate has also adopted the recycling approach in order to decrease the amount of waste that requires land filling. So, it has established a number of solid waste recycling facilities, operated by either foreign or local companies according to a contract with CCBA, and are fully under its control and supervision. Three recycling facilities are currently operational in the Southern, Northern and Eastern zones of the governorate. Another facility is currently being constructed in the western administrative zone.

To follow the directives set out by the NSMSWM, Cairo has taken serious steps towards privatization of solid waste management services. It had contracted private companies (either national or international) to provide a number of essential services including cleansing, production of composting, construction of sanitary landfills, and construction of treatment units for hazardous medical wastes. Each and every company had officially received its assigned zone according to the contract to start delivering the required services. This step is being continuously evaluated to identify positive and negative side for future improvements.

In the year 2007, Cairo governorate succeeded with the help of the Engineering Military department (Ministry of Defense) to collect and dispose 10,000,000 m<sup>3</sup> of accumulated waste through dividing the process into four phases, and transferring this accumulated waste to El-wafa w El-amal controlled dump site.

Phases	Collected Quantities	Disposed Quantities	Total m <sup>3</sup>
First	400,000	2,350,000	2,750,000
Second	300,000	3,000,000	3,300,000
Third	600,000	1,650,000	2,250,000
Fourth	400,000	1,300,000	1,700,000
<b>Total</b>	<b>1,700,000</b>	<b>8,300,000</b>	<b>10,000,000</b>

**Table 1:** Final disposed quantities of solid waste in Cairo governorate

**Source:** Egypt State of Environment Annual Report, 2007. Egyptian Environmental Affairs Agency (EEAA).

Overall, with current levels of population growth in Cairo, prevailing consumption and waste generation patterns, MSW management is still a major challenge facing the governorate. Despite of great efforts exerted by the governorate, the current system of waste management is facing some inefficiency.



The analysis of the current MSW management in Cairo has revealed a number of constraints/challenges that need to be addressed. Constraints facing each step of the management cycle are given below:

### **Waste generation**

- 1- Absence of separation at source with the huge amount of waste being generated in Cairo (that representing about 56% of the total waste generated in Greater Cairo Province, and represents about 23.6% of the total daily generated municipal waste in Egypt).
- 2- There is no national policy for reduction of generated waste at source.
- 3- Mixing of other waste streams especially the industrial hazardous waste with the ordinary MSW.

### ***Collection and transportation of waste***

- 1- Lack in the efficiency of collection and transportation of wastes in relation to the generated quantities, where it is only currently representing about 70%.
- 2- Decrease in the number of containers, and their unsuitability with regard to type and volume.
- 3- Random waste disposal in areas that are not designated for collection or disposal.
- 4- Random sorting by scavengers either in streets, or in waste collection sites.
- 5- Non-obligation by foreign companies towards the execution of the ratified contracts with municipalities, coupled with pull-out of some foreign companies from working in the MSWM in many areas and districts in Cairo city.
- 6- The falling short of repair and maintenance programs of vehicles' fleet and equipments operated by cleansing authorities, which had resulted in a large number of out-of service vehicles and equipments.
- 7- Reluctance of people to pay the fees of collecting and disposing off their municipal wastes.

### ***Transfer stations***

- 1- Inefficiency of collection and transportation services of waste.
- 2- Emergence of random dump sites.
- 3- Prevalence of waste conflagrations, and their concurrent effect on air quality in the city.
- 4- Limited usage and utilization of materials that could be recycled.
- 5- The increase in the amount of waste inside landfill areas, with subsequent increase on the demand for available spaces for land-filling.

### ***Waste recycling factories***

- 1- Inefficiency of recycling processes, where the total amount of organic waste that being recycled does not exceed 15% of the total organic waste generated on a daily basis.
- 2- There is no national policy for reduction of generated waste at source.
- 3- Lack of the needed technical support to upgrade and increase productivity of waste recycling factories.
- 4- Marketing problems for products.

- 5- Engrossment of most valuable materials as a result of random sorting at source mostly by scavengers.
- 6- The obvious shortage in the number of factories in relation to the generated quantities of waste, where there are only thirteen (13) factories up until now, but the required number may reach up to 70 factories.

### ***Final disposal***

- a) In dump sites:
  - i) Waste accumulation in an irregular, haphazard way.
  - ii) Prevalence of bare waste conflagration, with subsequent effects on air quality in the city, whereas in 2007 the quantity of conflagrated waste was 2000 tons in five sites increased to almost 5000 tons in 2008.
  - iii) Non-habilitated dump sites.
  - iv) Non-application of technical specifications in waste disposal.
  - v) Self-ignition of waste and prevalence of conflagration, with subsequent effects on air quality standards.
- b) In sanitary land fills:
  - i) Reliance on random and open dump sites for final disposal of waste.
  - ii) Non-existence of a plan for expansion in secured sanitary land-filling, where it is currently only representing 15%.
  - iii) Non-application of proper standards for sanitary land-filling, either in the design of the landfill itself or in the process of land-filling in general.

### **Governorate previous initiatives to manage Solid waste**

The Governorate had initiated a number of programs for Solid Waste management in the city. Some of these programs had been ceased either for institutional or financial reasons, these programs are sighted hereafter:

- 1- The Sanitary landfills for Northern and Western zones, as well as the treatment units for hazardous medical wastes- this project had been stopped as a result of changing the proposed site from AlWafaa wialamal to another site on Al-Qattamiya-Al Ein El-Sukhna road, where the procedures for choosing the new site are currently being finished. Also treatment of hazardous medical wastes had stopped in the Northern zone after contract revocation.
- 2- Control on the quantities of produced gases (especially CO<sub>2</sub>) from compost recycling factories in the southern zone (Carbon Unit; CU) - where a contract between ECARU company and *Cairo Cleansing and Beautification Authority- CCBA*, has been established for this reason with a source of finance from the World Bank.
- 3- Industrial hazardous waste treatment unit in the southern area- where current negotiations are being underway to establish an Industrial hazardous waste treatment unit in 15<sup>th</sup> of May city (in the Southern zone).

### **Priorities for action**

In the past years the problem of solid waste management has taken high priority that culminated in political commitment at the highest level for a decisive confrontation towards a complete eradication based on a well-founded scientifically planned

approach, serious involvement of all stakeholders, allocation of the needed resources, followed by serious implementation with close control and responsive corrections. Options that have been considered included mostly composting and incineration. Several solid waste management studies conducted in Egypt indicated that the methodology of transferring wastes and garbage into organic fertilizers by composting in windrows, and recovery of some useful materials, is one of the most appropriate methods for solid wastes treatment in view of the Egyptian conditions.

The future plan of the Governorate of Cairo in promoting the recycling industry and maximizing the profit gain from this industry is based on two pillars;

- a. Expansion in recycling activities by establishing of more recycling factories for conversion of waste to compost, and establishing of plastic recycling factories; and
- b. Encouraging sorting and separation at source, to decrease the unit price of the produced recycled products.

The priorities for action towards improvement of the current municipal solid waste management system in Cairo are summarized in the following points:

- 1- Increase the efficiency of collection and transportation services.
- 2- Increase the efficiency of vehicles and equipments (currently in service).
- 3- Establishment of transfer stations.
- 4- Rehabilitation of dump sites.

### **Proposed action plan for improving the current Solid Waste management System in Cairo (Opportunities for SCP initiatives).**

The action plans for improvement of the current municipal solid waste management in Cairo could be figured out in terms of: **immediate action plan** and **future action plan** (a five years plan till 2012).

#### ***The immediate plan includes:***

- 1- A program for improving the efficiency of collection and transportation services, including consolidation by new vehicles and/or equipments (about 10 vehicles are required), as well as rehabilitation of some old (currently in service) vehicles and equipments (an average number of 40 vehicles, 8 bulldozers, and 4 excavators) need to be rehabilitated.
- 2- A program for establishment of transfer stations, with capacity of 400 ton/day, this include establishment of around three transfer stations in Helwan, El-Salam, Ezbiet El-Hagana.
- 3- A program for rehabilitation of the controlled dump sites (Al-Wafaa wilamal).
- 4- Moving of pigs' herding stables of Greater Cairo region outside the residential area, where a decree from the Prime Minister has been issued to move those stables to the desert area of 15<sup>th</sup> of May city that is about 7km away from the residential area.

#### ***The future action plan:***

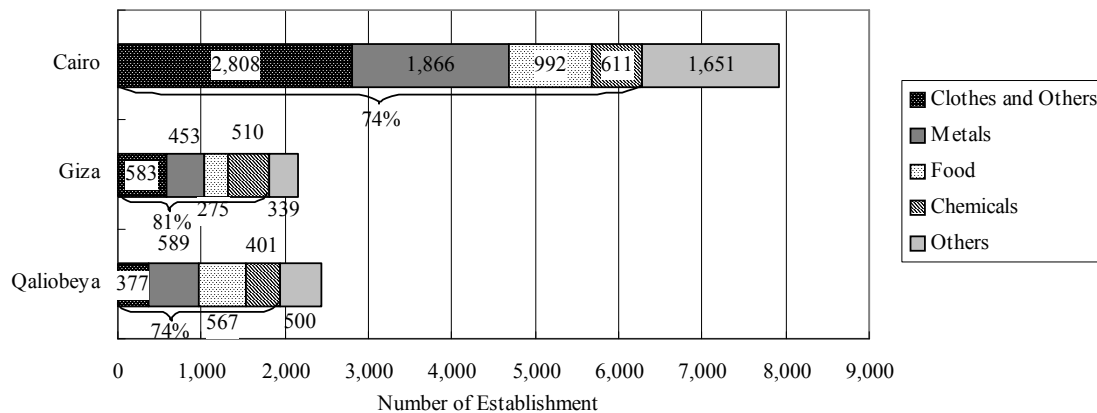
- Increase the number of recycling factories for the production of compost.
- Establishment of mobile transfer stations.

- Continual rehabilitation of dump sites.
- Construction of the sanitary landfill for both the northern and western zones.
- Construction of the treatment unit for hazardous medical waste for the northern and western zones.
- Establishment of the treatment unit of industrial hazardous wastes in southern zone.
- Control on the amount of produced CO2 from composting factories and does not allow for its conversion to methane by establishing of Carbon Unit (CU).

From the above analysis, it appears that the adopted waste management approach of the Cairo Governorate depends mainly on end of pipe solutions, but overlooking the generation process. Hence it is recommended to incorporate a number of initiatives to the already adopted plan of the Governorate that could be implemented on long term basis: an initiative for waste reduction (minimization) at source, that surely help in decreasing the amount of generated waste. The initiative of segregation at source which help making the most efficient use of the produced solid waste in the city by identifying and quantifying the amount of solid waste that could be recycled and/or re-used and move them directly to waste recycling, reusing facilities.

## 5.2 Industrial Development

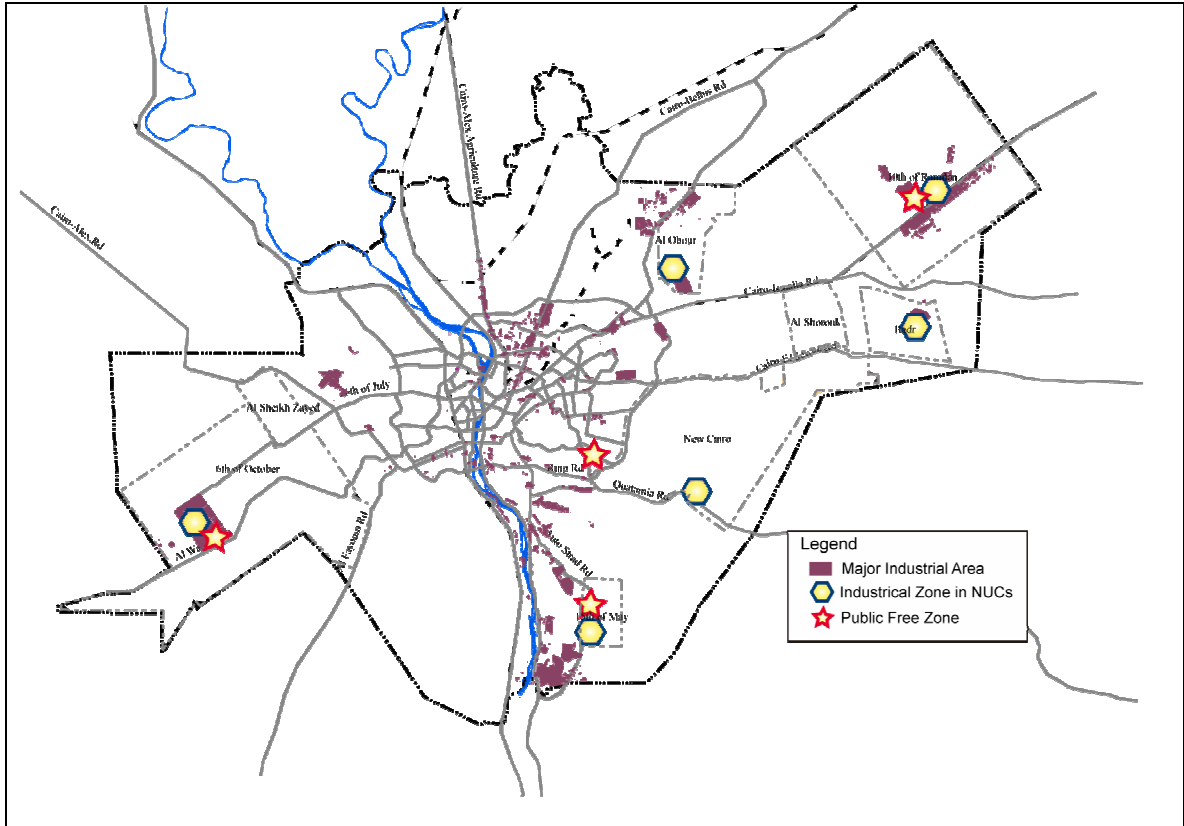
Cairo governorate contains 8 industrial zones which are (South Helwan, El-Qatameya, Shak El So'ban – occupancy, Tora and Shak el So'ban free zone in Nasr City, Badr City, 15<sup>th</sup> of May city and New Cairo). The total number of establishments in these industrial zones reached 9,128 according to the statistics of the industrial activities carried out by the Ministry of Trade and Industry (MTI) in 2007. The total areas of these establishments occupy 25% of the total Cairo Governorate area.



**Figure 11:** Number of Factories by Main Activities in Cairo, Giza, and Qaliobeya in 2004

Source: Statistics, IDA, 2005

Note: Metals and others include machines, transportation equipment.



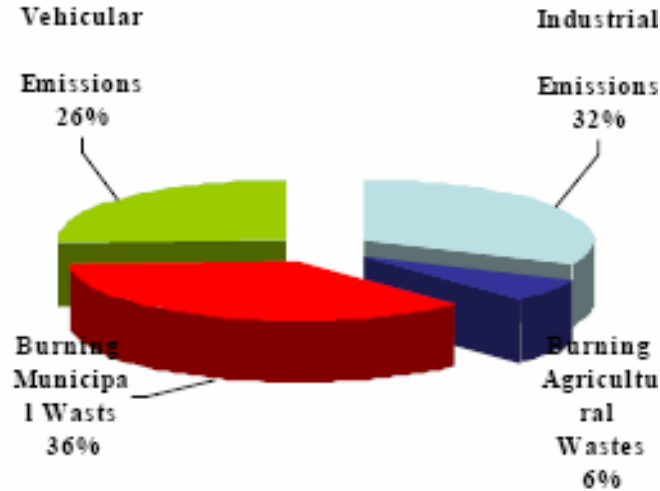
**Figure 12:** Location of Industrial Areas in Greater Cairo

**Source:** CREATS, JICA, 2007

Figure 12, indicated details of industrial zones in the study area. Among three governorates, Giza governorate has largest share of industrial area at 56% of total area or 4,338 ha followed by Cairo Governorate at 25% of total area. Also, industrial area tended to concentrate on NUC as indicated in the share of 86% of total area located in NUC such as Badr, 15<sup>th</sup> of May, New Cairo, Obour, and 6<sup>th</sup> of October.

Regarding the condition of existing industrial area, industrial area under operation is 53% of total area or 3,991 ha and the other large amount of 47% to total area is still vacant for investors.

Environmental pollutants due to industrial activities are well documented. Industrial activities in Cairo not only contribute to water, air and soil pollution directly, but also they are major producers of Hazardous Waste (HW). This is due to the fact that there are no facilities in Cairo Governorate to handle and treat such types of waste.



**Figure 13:** Annual Average of Pollution Ratios by Suspended Dust from various sources  
**Source:** Egypt State of Environment Annual Report, 2007. Egyptian Environmental Affairs Agency (EEAA).

Based on the study prepared by a consulting firm named 'Environics' in 2006, addressing the industrial hazardous waste in the GCR generated from different industries and with using the HW list of the Ministry of Industry twenty-two industries were identified as significant hazardous waste generators in Cairo. Examples of these are:

- Detergents Industry
- Textile Industry
- Tanning Industry
- Paints Production Industry
- Plastic Manufacturing Industry
- Coke Production Industry
- Iron and steel Smelting Industry
- Non-ferrous Smelting Industry
- Chemicals Production Industry
- Equipment Manufacturing
- Electrical Equipment Manufacturing
- Metal Finishing and Plating Industry
- Vehicles and Vessels Manufacturing
- Iron and Steel Industry
- Batteries production

Other main industries in Cairo that are not addressed as a source of HW generation are the cement industry, pesticides production, paper manufacturing industry, ready made garment manufacturing, leather production.

Several activities were carried out by the EEAA and Cairo Governorate in collaboration with the Ministry of Irrigation to combat the negative impacts of industry. A major effort was directed towards the prevention of industrial waste discharge into the Nile.

Industrial pollution in Cairo Governorate results from two main sources. The first is the small and medium industrial facilities within the residential areas, while the second is the large establishments surrounding the City. Several problems arise from these workshops and establishments which is why the governorate has considered the industrial development as a priority area in its agenda. The two categories are furtherly discussed below.

### **Current Situation of SMEs**

The Northern, Western and Central areas of Cairo are considered of the most congested areas of both craft workshops and factories for different professions. There are around 1343 small and medium sized industrial facilities in Cairo governorate whose functions differ between potteries, tanneries, quarries and crushers. The proliferation of these workshops is the main cause of complex planning problems within densely populated residential areas. These problems can be summarized as follows:

- Proliferation of SMEs and craft workshops inside residential and service areas of the city capital.
- The craft workshops and factories currently occupy the heart of the city and dilapidated areas in the city center.
- Workshops are considered the primary source of causing environmental pollution in its various forms (air - noise - Water ...), as well as the main cause of traffic congestions and parking problems within the residential and commercial center of the city
- Most workshops and factories are in the archeological zones of Old Cairo which mars it.
- Infrastructure Networks (roads - water - sewage -electricity...) are unable to perform their services as a result of factories and workshops.
- The difficulty of applying the planning executive regulations as result of the proliferation of craft workshops and factories due to the overlapping informal land use.

Accordingly, Cairo Governorate has undertaken several initiatives in the form of relocation and/or rehabilitation projects to help minimize the above mentioned problems, these include:

- The Governorate is planning the Relocation of 569 smelters to the New Cairo city as a part of the plan for relocating and improvement of smelters which started in 2004 in the GCR.
- The improvement of 29 potteries in the Mosalasa area in old Cairo, while the process of improvement of 150 potteries in Batn El-Ba'ar area in old Cairo is still on-going. This project is expected to finish by the end of 2008.
- There are 50 quarries in Cairo Governorate for which there was an initiative to prepare environmental requirements for operation of quarries and the process were adjusted to control dust emissions.

- There are around 250 marble workshops and around 4 crushers in Shak El-So'ban in Tora. Improvements are being carried out for these small industries and so far about 50% of the infrastructure and services needed are finished and all are operating with electricity and equipped with dust control systems.
- 500 feddans in El- Robeiky (North of Badr City) have been allocated by decree 161 for the year 1995 for the relocation of the Tanneries and glue factories in Old Cairo. The project also planned the transformation of the sites into residential, commercial and recreational areas.
- Cairo Governorate had a plan to relocate polluting industrial facilities. For this project, the governorate has allocated 1500 feddans south El-Katamya- Ein Sokhna Road for the relocation. The activities designated for relocation were as follows: smelters, pigs' farms, waste collection, coal facilities, crushers, brick production facilities, potteries and tanneries.

### **Current Situation of Large Establishments**

The Ministry of Trade and Industry (MTI) carried out a study for the relocating large factories from Greater Cairo Region in March 2006, Among 13,483 factories registered by General Authority for Industrial Development (GAID) under MTI in Greater Cairo Region GCR, MTI identified 419 large factories having investment cost more than LE 10 million or work forces more than 500 workers. The MTI's study classified those large factories into three categories by the level of pollution according to the definition by EEAA.

Thus, the MTI Study on Relocating Large Factories from Greater Cairo Region consists of two stages as follows:

First stage: identifying large factories and classifying them in accordance with the pollution level, to develop the basic data and economic indicators of the highly polluted factories which need to be relocated.

Second stage: to propose alternative sites for relocation of the highly polluted factories: to identify the requirements for the relocation process, costs, and socio-economic impacts.

The MTI selected 21 factories and assesses their environmental status, 10 factories of the selected 21 factory are located in Cairo Governorate. Currently there is no action taken yet in the relocation process, these factories are:

- National Co. for Cement – Helwan
- Tora Portland Cement Egyptian Co.
- ASEC Cement Co.
- Al-Nasr for Coke and Basic Chemicals
- Iron & Steel Eg. Co.
- Heliopolis Co. for Chemical Industries
- Paintings & Chemical Industries Co.
- Al-Qoba Factory
- Al-Nasr Co. for Tiers
- General Co. for Minerals



Facility Name	Candidate Site for Relocation	Expected Alternative Function after Relocation			
		R	C	P	Others
National Co. for Cement – Helwan	10th of Ramadan	X	X	X	
Tora Portland Cement Egyptian Co.	10th of Ramadan	X		X	
ASEC Cement Co.	10th of Ramadan	X		X	
Al-Nasr for Coke and Basic Chemicals	Badr	X		X	
Iron & Steel Eg. Co.	10th of Ramadan	X		X	
Heliopolis Co. for Chemical Industries	Al Obour	X	X	X	
Paintings & Chemical Industries Co.	Al Obour	X	X	X	
Al-Qoba Factor	Al Obour	X	X	X	
Al-Nasr Co. for Tiers	10th of Ramadan	X		X	
General Co. for Minerals	Badr	X		X	

**Table (2):** large facilities proposed relocations and Alternative Function after Relocation.

**Source:** Strategic Urban Development Master Plan Study for Sustainable Development of Greater Cairo Region in Egypt, 2008

- R-Residential, C-Commercial, P-Parks and open spaces

- “X” means function acceptable to be introduced. Detail study will be necessary to determine the alternative functions for each site

### Challenges and Constraints

The Analysis conducted to the main polluting sources in Cairo revealed the presence of several challenges hindering the progress of industrial development; these are:

- Difficulty and high costs of relocation of large scale industries.
- Failure of some old industrial facilities to comply with environmental policies and standards.
- Inadequacy of proper land slots for relocation (*Problem is now aggravated after the new changes made to the administrative boundaries of governorates and the establishments of two new governorates which are Helwan governorate and 6<sup>th</sup> of October governorate*) of polluting industries and difficulties in securing necessary approvals from related official authorities.
- The random spread of polluting small and medium scale industries within the residential areas.
- Problems facing existing industries to adopt cleaner production concepts.
- The unavailability of IHW management system in Cairo

### Priorities for Actions

In summary, the challenges and constraints facing industrial development in the city of Cairo revolves around the main causes of problems which are the old large

establishments and the SMEs. Consequently, this can only be remedied by addressing these two pivots of the industrial situation. A number of actions are recommended, such as:

- Upgrade existing land use plans to guide the relocation process.
- Continue efforts for identifying polluting industrial activities (small, medium and large establishments)
- Facilitate new innovative approaches for the adoption of cleaner production technologies in SMEs
- Take the necessary steps towards the development of an industrial Hazardous Waste Management System.
- Vacant lands after relocation of the ten factories should be used for new functions that will meet the following requirements: (i) No further migration into neighborhoods, (ii) contribution to upgrade the living environment, and (iii) Contribution to human resource development to compensate the job opportunities provided in the ten factories. On the basis of those three requirements, new function will basically consist of residential, commercial, public spaces such as a park and open spaces, and centers for human resource development.
- Heavy industry and other industries with specific environmental measure will need to allocate far from main agglomeration or outside the outer ring road. 10th of Ramadan new urban community NUC will be a candidate site for such purpose.
- New lands for SMEs will be developed in and around 6th of October and 10th of Ramadan. Accumulation of SMEs will be supportive to the industrial activities in each industrial area, while the collaboration will contribute to upgrade technical skills of SMEs.

### **5.3 Urban Development**

It is clear that rapid urbanization and poor economic trends are leading to deterioration of living conditions, especially for low-income urban dwellers. This alarming deterioration in the quality of life forming what we are now calling "Slum Areas". Slums means the areas which have grown in the absence of planning process, these marginalized areas which have a little attention from the government are defined as settlement with; low-income people of high population densities, suffering of poor standard of living environment with lack of regular sources of income, frequent health hazards and a lack of basic services and infra-structure.

#### **Cairo slums current situation**

Slums in Egypt represent 30% of its urban settlements. There are more than 1100 areas, hosting a population of 16 million inhabitants, where informal and mixed activities are located. As for Cairo, a comprehensive survey has been carried out to identify existing slum areas. It was found that there are 81 slums located in Cairo; which have grown on state-owned land with a total area of 2670 acres. These include 68 slums on a total area of 2500 acres, which are currently on-going in the developing process, and 13 slums having a total area of 170 acres, which urgently need to be completely removed and re-planned. The total expenditure on slums infra-structure and development projects reaches 887 million pounds; Fig (6) shows Cairo governorate slums. The methodology used in dealing with slums is as follows:

#### **A. Slums which are currently in the developing process**

- Planning studies for identifying needed services.
- Area upgrading, expansion of narrow streets and alleys to allow service providing.
- Apply building requirements according to each area characteristics.
- Forming a steering committee for each area from the area stakeholders and concerned parties, in order to supervise the implementation of projects and programs with the integration of local and international entities.
- Preparation of timeframe schedule for houses development and upgrading and working on a sustained maintenance plan with the steering committee.

#### **B. Slums which require complete removal and re-planning (2 models)**

- Complete removal for the whole areas, resettlement of inhabitants in other urban areas, and re-plan the removed area and change its land-use (green areas- services and investment areas- etc.), with the compensation for the land owners. This model was used in Hekr Abu Doma area which became a touristic commercial area and Ard El-torgoman area which also became a commercial area.
- Removal and re-planning of areas according to urban basis, with the temporary resettlement of citizens until the re-planning and re-citizens back again, applying integrated development mechanism for the re-planning process and preparing a new urban planning model. This model was used in Zenhom and El-Dewka slum areas.

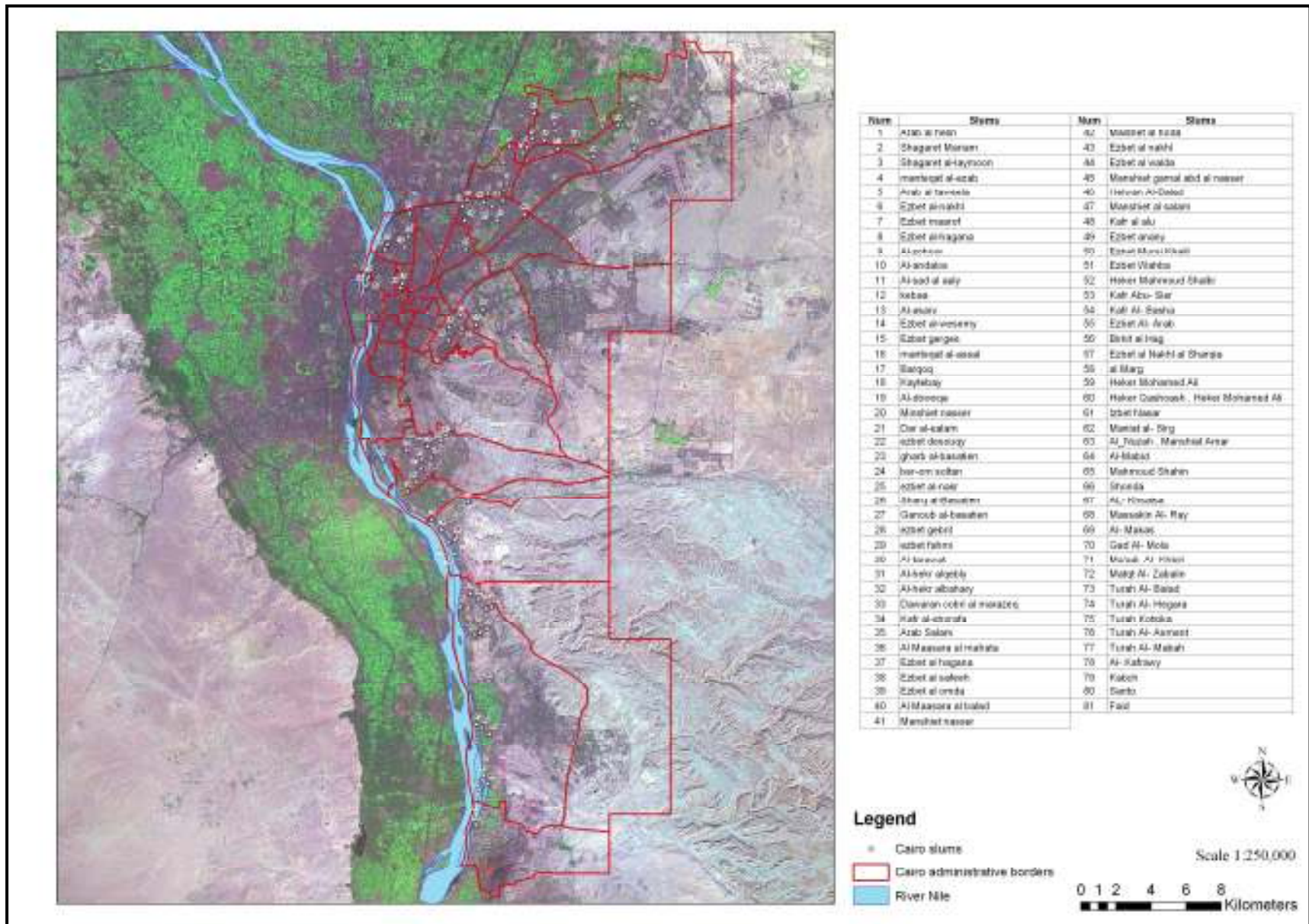


Figure 14: Cairo governorate slums

Although the current programs and projects are producing good results and contributing to solving the problem of slum areas in Cairo, a number of challenges and constraints have been identified. These include the following:

- Absence of accurate and systematic information on (and even maps of) slum areas and their needs, is the main constraint when dealing with slums.
- Limited accessibility to services and infrastructure and the appearance of illegally obtained public services, due to the absence of planning and services.
- Increase in number of deteriorated buildings, which was a result of confused ownership and/or owner neglect due to controlled rents, as many of the families inhabiting these structures are quite poor.
- Dependency on informal economic sector, micro enterprises and environmental practices to sustain businesses and to combat unemployment. This informal sector has a difficult access to public markets, and needs to be changed from informal to formal one in order to provide social safety networks, develop human resources and to address environmental issues of concern to the poor.
- Institutional and financial constraints, as a result of the gap between planning, implementation and financial aspects. There was a marked difference between projects planned, those approved and actual executed investments, which were not directed towards needed projects.
- Inadequate implementation of some policies such as; adding solid waste collection fees to the electricity bill was a mean to raise funds to improve service provision to poor settlers. Although it is currently implemented, no real enhancement occurs in the service quality for slum dwellers.
- Existence of health hazards and lack of environmental awareness.
- Inadequate legal framework to eliminate appearance and existence of slums.

### **Cairo slums priorities for action (opportunities for SCP)**

The improvement for the current Cairo slums situation needs some actions; some are currently on-going, while others needed to be taken. These actions can be highlighted as follows:

#### **- On-going actions**

- Building an integrated database for slum areas. This is one of the currently on-going main tasks of Cairo governorate Slums Development Unit as a means to achieve efficiency in planning.
- Increase coordination between different parties involved in slums development. A new governmental decree has been published forming the slum area coordination committee, aiming at increasing coordination and linking between planning, implementation and budget. This committee consists of; slum development unit, urban planning department, information center, plan and budget department and the concerned districts.

- Focusing on community empowerment and encouraging self motivated actions through working with the NGOs in slums development. Currently, there is a committee named **Local Initiatives Committee** consisting of; governorate slums development unit, ministry of social solidarity representative, ministry of economical development representative and the leadership of the concerned district, its main task is to study development and upgrading projects which is proposed by NGOs and identify priorities for action for these projects.

**- Needed actions**

- Checking legal status of informal economic sector by empowering and increasing access to micro-finance and business support services, providing markets and training for products enhancement, aiming to increase slums dwellers incomes and access to jobs and enhancing their life-style and converting this informal sector to formal one.
- Providing and increasing access to infrastructure and services, such as paved lanes and road to assure affordable means of transportation, potable water supply, solid waste collection, wastewater collection and treatment, public schools and medical services for better living environment.
- Enable land ownership and property registration, to assure community participation in houses maintenance plan after completion of the upgrading projects.

## **5.4 Transportation and Air Emissions**

### **Current situation**

#### **- The current institutional and legal frameworks regulating transportation**

A strong institutional framework is backing-up planning for transportation in Greater Cairo region, where a committee for Greater Cairo Transportation Planning has been established by a Prime Ministerial Decree no.1138 in 2000. The committee is responsible for overall planning of transportation in Greater Cairo including overseeing planning and establishing priorities as well as follow-up the implementation of transportation projects. The committee is chaired by the Minister of Transport and includes representatives from the Ministry of Transport, Ministry of Housing, Ministry of Interior, and Ministry of State for Environmental Affairs, and the Governorate. The Egyptian National Institute for Transport (ENIT) is acting as the executive agency.

In addition to this, a legal framework is also supporting the implementation of the plan of action regarding situation improvement in that sector, whereby and as per the 2005's new regulations of the environmental law, vehicles' emissions must not exceed 600 ppm for vehicles manufactured in 2003 or after. As for the carbon monoxide (CO) generated from vehicles, 2.5% is the allowable percentage for vehicles manufactured before 2003, and 4.5% for vehicles produced in 2003 and later. For

vehicles using diesel, the opacity shouldn't exceed 30% regardless of the year of manufacture.

The Ministry of State for Environmental Affairs in collaboration with the Ministry of Interior have established in 1998 (as part of Cairo Air Improvement Project-CAIP) a number of **VET** units; **Vehicles' Emission Testing**, to technically examine vehicles that fail to abide to law limits. The Minister of Interior had issued a decree that: any car exceeding these permissible levels of emissions will not be allowed to renew its license.

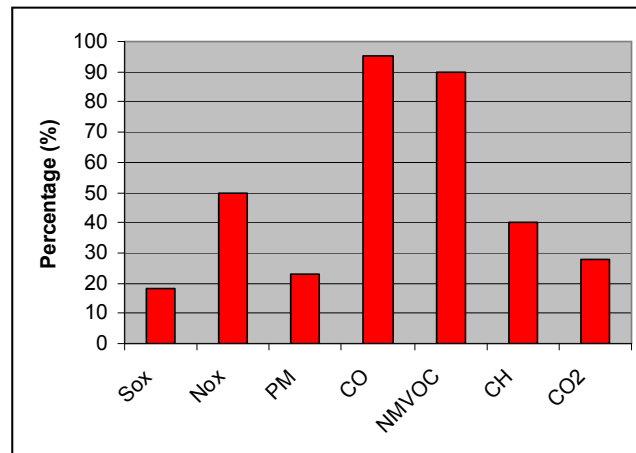
Lately, the Egyptian Deliberation Council has approved some new amendments in the traffic law (No\_66 for 1973); the new amendments aimed at dual objectives of reducing pollution induced by transportation, and provide more safety and security for citizens. An example of some of the proposed measures and/or practical solutions in the new law that radically deal with the increased level of pollution induced especially from cabs, is that licensing of these cabs- for the first time- will not be allowed for those who had been manufactured ten (10) years ago, also renewal of licenses will not be done for those whom had been manufactured twenty (20) years ago. Into this respect the law has granted a period of two years as allowance for cab drivers to comply with the new regulations.

Another important amendment in the traffic law is represented by the new article of banning import, manufacturing, or licensing of trailers or semi-trailers towing tractors in big cities, where severe penalties has been put for those violating this article, the reason for that has based on the latest statistics that proofed that the rate of accidents caused by trailers in the past few years had reached a percentage of almost about 31.5% of the total number of accidents caused by different transportation modes in the country. Again the law has granted a period of one year as allowance for trailers' factories to comply with regulations of the new law.

#### **- Transportation- overview and assessment, Problems, their causes, dimensions and manifestations**

While several studies have been conducted, and a number of strategies as well as action plans have been developed for addressing the challenges faced by transportation sector in the city of Cairo, the implementation of these plans had suffered in the past from lots of different encumbrances.

Indeed, transportation problems in Cairo have different facets, they include; **traffic problems, mass transit problems, parking-lot problems**, and in some if not rather all of these problems, there always been a **pollution dimension** aggravating them and posing a real threat to the public health and/or environment where, the total annual fuel consumption in transportation sector is of 31%, and the annual demand of fuel is rising by 3 and 4%, as the evolution of transportation sector in Greater Cairo over the past three decades showed an increase in the use of passenger cars (including taxis), that are currently absorbing over one-fourth (25%) of the motorized trip market. Some forms of public transport, in particular public bus services and light rail, have suffered a corresponding decline in patronage. Shared taxis, on the other hand, have aggressively increased their market share.



**Figure 15:** Transportation share in Cairo air pollution  
**Source:** CREATS, JICA, 2007

The overall reasons of the current limitations in transportation system in Cairo include a number of **technical, administrative, and financial aspects**, they are listed hereafter:

- Lack to adequately address long-term sustainable development needs in transportation sector, with lack of effective work plans that highlight the problem from all its different sides, and seeking possible, mitigate solutions to be implemented either by the government or through private sector partnership.
- Lack of clearly defined roles and responsibilities for different shareholders working at the field of transport in the city, compounded with lack of inter-sectoral co-ordination (harmonization of policies, and institutional co-operation) and limited institutional capacity to effectively adopt, implement and further develop programs;
- Lack of adequate enforcement to properly enforce the acceptable standards of transport services in the city.
- Limited access to financing mechanisms to fulfil the required investments in that sector; whereby funding at all levels of government to support sustainable transportation is a major hindrance.
- Non-optimal use of mass transit systems, combined with deteriorating conditions of public transit systems, and inadequacy of maintenance for communal vehicle fleets of the affiliated authorities;
- Focus on single infrastructure investments or technology-driven approaches without integrated view on the broader requirements for successful intervention; also the lack of complementary infrastructure to trigger demand for public mobility.
- Possible public perception with lack of adequate level of awareness, together with some social and cultural barriers;
- Lack of administrative tools (e.g. decentralization) resulting in an inability to plan adequately for sustainable transport that co-op well with trends and patterns.



**In depth analysis for the different facets of the transportation problems is given hereafter:**

**- Traffic problems in Cairo:**

Traffic problems in Cairo have dual face of increasing emissions' loads far beyond the allowable limits stated by the law, and the increase in travel time taken by vehicles due to road congestion, and both cause a potential loss in the national economy, either directly or indirectly. In general, Cairo suffers immanent difficulties in movement of people and flow of traffic, this is caused by two main factors; in part, the incredible and unexpected increase in either the number of newly licensed vehicles, and/or the renovated, refurbished old ones that roam up streets day and night, and in another part by vehicles coming to the city from the surrounding governorates (and sometimes on a daily basis) as of the attractiveness of the city, and/or its absolute centralization in production, and services.

Regarding the increase in the number of newly licensed vehicles, and/or the renovated, refurbished old cars, comparisons of old statistics with recent ones had showed that the **average private car and taxi ownerships** was of about 16 cars per thousand people in 1973, then increased to 66 cars per thousand people in 1978, and reached between 79 and 107 cars per thousand people in 2000. It is obvious that the main cause of the problem is the increase in demand (i.e. traffic demand) than the actual level of supply (i.e. the available traffic supply). Some other recent statistics provided by Cairo General Traffic Department (CGTD) has proofed the magnitude of the aforementioned situation, whereby as for the total number of **driving licenses** issued in 2007, **private licenses** represented the majority with a percentage of 72%; additionally the total number of commercial licenses issued in 2007 had represented only about 14.7%. Of the total number of driving licenses (source: Cairo general traffic department, 2007). On the other hand the total number of **vehicles** licensed in 2007 were 100281, of this figure **private cars** represented about 72.71%, whereas the total number of bikes licensed in 2007 were 15619, representing a percentage of only about 15.57% (source: Cairo General Traffic Department,2007).

Whereas, for the other side of the problem regarding the incoming vehicles from surrounding Governorates, the number of daily incoming vehicles to the city are estimated at approximately 1.2 Million vehicles (according to the latest statistics by Cairo General Traffic Department), while on the contrary, city streets can not accommodate more than 450 000 vehicles.

**- The root causes of traffic problems in Cairo can be summarized as follows:**

1. Inadequacy of roads' network to meet the continual demand on traffic.
2. Non-availability of adequate traffic awareness among road users.
3. Inadequacy of means of mass transit to meet the needs for passengers' movement.

Traffic challenges will remain as long as licensing of cars is going on uncontrollable. Traffic jams will not end until the number of licenses is limited and the traffic law is strictly enforced.

### **- Public transport problems in Cairo**

According to the transportation study prepared by JICA for Greater Cairo (CREATS), the public transport served a total of 12.436 million daily-motorized trips during a typical 2001 weekday. This represents 68% of all motorized trips generated within Greater Cairo. Shared taxis carry some 6.5 million daily passengers, or 52% of daily-motorized public transport trips. Public buses account for a further 3.5 million daily trips (28%), and the metro slightly over 2.0 million trips per day (17%). The contribution of other public modes is modest aggregating to about 0.4 million trips per day (3%).

Public transport services in Greater Cairo can be divided between “formal” and “informal” sectors. Formal urban public transport services are provided by the public sector, including CTA (Cairo Transport Authority) and its subsidiary GCBC (Greater Cairo Bus Company). In addition to busses, the CTA operates light rail services (tram and the Heliopolis metro). Other key organizations of the formal urban public transport sector include the Cairo Metro Organization (CMO), provides urban heavy rail services (the Metro) and the Egyptian National Railways (ENR), sponsor of suburban commuter rail services. The CTA belongs to Cairo Governorate, while CMO and ENR work under the jurisdiction of the Ministry of Transport. The informal sector consists of route-specific shared taxis operated by the private sector and using minibuses or minibuses with a passenger carrying capacity of 11-30 passengers. Shared taxi services are licensed by Cairo Governorate (under the jurisdiction of CTA); almost 20,000 shared taxis are licensed, including some 237 routes as well as over 8,000 minibuses in the Governorate. It is estimated that 40 per cent of the air pollution in Egypt result from the vehicles roaming the streets.

As revealed by several previous studies, there are a number of issues related to the management of the current public transport system in Greater Cairo area that should be tackled in order to effectively address both air pollution and congestion problems.

1. ***Disaggregate Planning:*** Each of the public transport operators has its own way of operation without paying attention to other operators (in other words, there is no sensible coordination or integration among different operators) thus minimizing the available resources (supply) to meet the expanding demand. This phenomenon is prominently apparent in case of private operators, but also clearly manifested, for instance, between CTA and CMO.
2. ***Fare Policy:*** Current fare policies of the individual public transport modes do not facilitate cooperation among various operators. Fares and subsidy structures of the different modes are set in isolation of each other. A pioneer study carried out in 1995<sup>1</sup> gave an applicable comprehensive fare policy for GC transport, but unfortunately it was never implemented.
3. ***Controlled Fares:*** The public transport operators are constrained by controlled fares (in response to political/social goals) which, in turn, reduce

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<sup>1</sup> Greater Cairo Public Transport Fare Policy Study, the Transportation Program (TP) of the Development Research and Technological Planning Center, DRTPC, Cairo University and SYSTRA for Transport Planning Authority, Ministry of Transport)

revenue, thus contributing to a lack of maintenance and, ultimately, the inability to replace aging vehicles.

4. **Shortage of Funding:** Formal transport operators, as government entities, are totally reliant upon federal Ministries for capital funding and, along with other Ministries, departments and organizations, must compete each year for limited domestic financial resources in the political arena. As a result, near and long-term tactical as well as strategic planning for the provision of urban public transport services is harshly constrained by uncertainties in funding. Instead, operators focus all their efforts on the day-to-day operation of the system, in order to acquire sufficient revenues.

5. **No Bus Priority:** there are any bus priority traffic management treatments in effect. All formal bus services operate in mixed traffic at an average scheduled commercial speed of 15-20 km/hr, considerably less in central areas. This is a major barrier to the effective and efficient operation of public transport services.

6. **Minimal Modal Coordination:** This is linked to the disaggregated planning of the sector. There seems to be little institutional cooperation among different agencies planning and operating public transport services, in particular, among CMO, CTA and shared taxi services.

Thus, independent scheduling, uncoordinated route structures, and independent fare structures do not facilitate interchange among the various urban public transport modes.

#### **- Parking-lot problems in Cairo**

The problem of transportation in Cairo could additionally have another facet in addition to the increased number of motorized vehicles, and the deteriorating mass transit services that is the; a lack of parking areas, that force vehicles'/cars' drivers to use roadsides as parking-lots. Although the Egyptian building code dictates that each housing block and/or complex should have a garage at its basement, but the law is not strictly enforced, however some progress regarding this specific issue had been accomplished in the past few years, with newly built complexes.

#### **- Pollution problems caused by transport sector**

Transportation has proved to be the fastest growing source of CO<sub>2</sub> emissions; the total amount of greenhouse gas emissions from the transport sector in Egypt in 2002/2003 was estimated at 29 million tons vehicles' emissions are responsible for about 40 % of air pollution in the country. The problem of air emissions from transportation in Cairo represents a parcel of the national problem regarding deteriorating air quality. According to the Ministry of State for Environmental Affairs around five million vehicles roam the streets of Cairo daily "This means that if these cars roam Cairo for only 30 minutes, they will pump approximately 600 tons of carbon monoxide and hydrocarbons. Thus, air pollution from transport is a major problem in the city and considerably adding to the deteriorating air quality situation.

Observer of pollution trends caused by traffic in the city of Cairo could easily reveal that pollution had increased over the past few years; the number of cars in the capital had doubled, some smoggy streets of Cairo swarming with cars and vehicles, with

hundreds of dilapidated minibuses. Considering the negative impacts of both dangerous and annoying emissions; “hydrocarbons and carbon monoxide”, is a top priority, where they have proved to be very dangerous to public health, in addition some of these gases have toxicity effects as well. In addition, it has been found high levels of the conventional pollutants of Nitrogen Oxides (NOx) as well as a probability of high concentrations of toxic air pollutants such as benzene, formaldehyde, cadmium, nickel, and benzo-a-pyrene.

Cut down such dangerous and harmful emissions to the lowest, practical, acceptable limits dictated by the law has become a high priority for executive authorities in the Governorate.

**- Governorate previous initiatives to solve Transportation problem in Cairo**

Many previous attempts had been done over the past years with varying results of success and failure.

1. Parking meters were introduced successfully in the streets of the Central Business District (CBD) in Cairo in the very early 1970s and had lasted for about three years. But unfortunately maintenance was inadequate, thus the meters lost their effectiveness.
2. In 1976 the first trial to link traffic signals on all CBD streets had been introduced and operated that was very successful in the early days. But soon afterwards, traffic police had to turn most of the traffic lights into amber flashing most of the day as the automatic signal timing of the system were not offering smooth traffic flow, and it was better to impose manual operation. The reason for the failure of the system was due to the repeated interruptions of traffic as a result of presence of slow vehicles in the traffic stream, as well as some obstructing heavy vehicles, and the occasional passage of escorted convoys of city guests, thus the design of the linked signals system could not cope with these interruptions. Later in the mid 1980s, the World Bank sponsored another project on traffic management in the CBD, which included a linked system of signals, but unfortunately, exactly the same problems occurred as during the previous experience.
3. The introduction of Metro in 1987 has been able to reduce some of the pressure of the increased transport demand in Greater Cairo region, offering a good quality service with the average commercial speeds close to 35 km/hr and frequency of 3.5 minutes headway. But in order to make it more effective, bus services would need to be effectively coordinated with the metro stations with implementation of an integrated fare policy that would encourage greater use of the metro and reduce traffic flows and congestion on the city roads. This is getting even more real with the construction of the new metro third line started in 2005.
4. In 1996 the government launched the **Cairo Air Improvement Project (CAIP)**, its goal was to initiate and implement measures to reduce air pollution, which has the most serious impact on human health in Greater Cairo region, especially suspended particulates and lead, a major focus of the project was to reduce fuel emissions. Car

fuel efficiency is being targeted to reduce exhaust emissions from gasoline.

5. In 1997 the country phased out **leaded gasoline vehicles** and has slowly begun to set up monitoring stations for emissions-inspection of "aging" vehicles.
6. A protocol and memorandum of understanding has been signed between the Ministry of state for environmental affairs and Cairo Transport Authority (CTA) for inspection of their car fleets, where a number of 5000 buses had been inspected to verify their compatibility with the law. If a car stopped at a checkpoint and fails to demonstrate environmental compliance, its license will be revoked.

#### - **Current programs/projects to improve transportation sector in Cairo**

There have been some investment projects either in *road infrastructure* or *transit means*. A few examples for those investments in road infrastructure are: the **Autostrad** (took over about 400 million Egyptian pounds), the **6<sup>th</sup> of October flyover** (took over about 450 million), the **ring road** (took over about 2.4 billion) and the **underground Metro or Subway** (took over about 11 billion). Whereas for those investments in *transit means* they included:

1. encouraging mass transit inside and outside the city,
2. encouraging specific, purposive transit trips of fare-cabs by introducing the project of the city-cab, to minimize the number of journeys done by traditional cabs in roaming up streets day and night looking for passengers (However some security constraints had lead to seizure of this project)
3. Plan for moving taxi-cabs- linking different Egyptian Governorates with the capital outside the Central Business Areas (CBA), and the Traditional Residential Areas (TRA) to the city borders.
4. Integration of different public transit modes, including the underground Metro, the public buses and mini-buses, trams, (However, further endeavors are deemed necessary to gain improvement on this track).
5. Creating new road axes, in particular **transverse axes** to curb for throttling and lag time, like the recently accomplished project of **Al-Azhar tunnel**.

The transportation authorities are currently building a one-way extension that will connect the section of the 6<sup>th</sup> of October flyover- that runs parallel to Al-Galaa and Ramses Streets- with the 15<sup>th</sup> of May flyover, then to the 26<sup>th</sup> of July bridge, which ends at Sultan Abul-Ela Mosque (lying at 26<sup>th</sup> of July Street in Boulaq), the new extensions are considered as critical projects aimed at easing traffic throttling, and directing cars and vehicles (coming to and moving out) away from the city heart. This connection will provide commuters coming from Eastern Cairo on the 6<sup>th</sup> of October bridge with a direct route to the Mohandessin district, and will having a 40-minute trip during peak hours. "It will also relieve at least 40% of traffic in throttled areas of the city center. Estimates for construction of such extensions are in the order of about 100 million Egyptian pounds, and the Governorate is trying to

have a compromise with the central Government to provide finance from the general country “Balance Sheet”

**- Priorities for action**

Future growth in the city income will inevitably catalyze an increase in trip making, as well as changes in the types of modes used to accomplish such trips. It is likely that private modes of transport, such as motorcycles and passenger cars, will continue to become increasingly popular with residents of Cairo. The key issue is therefore how to manage growth in transport demand by developing transport system that ultimately enhance economic productivity, increase personal mobility, improve the urban environment and ensure financial viability. A key consideration in this regard is that **ultimately the need to move people must take precedence over the need to move vehicles.**

So, as the city grows, and particularly as it becomes more economically stable, its vehicle fleets grow more rapidly than road space. Increased traffic congestion (and pollution) will obviously aggravate. Parking of the growing vehicles’ fleet will become increasingly problematic. The problems will principally be “chronic traffic congestion”; with insufficient road space to meet competing demands of private vehicles, public transport, commercial vehicles, non-motorized vehicles and pedestrians.

It is clear that in order to significantly improve the situation; a major restructuring would need to be carried out in order to facilitate coordinated planning and improved integration of the different transport modes in general. In practice, however, this has proven to be very challenging tasks, especially if not initiated and “pushed” from inside the system.

A realization of a balanced and multi-modal environment had ever presented a continuing challenge for Cairo. Generally what was needed to improve the situation, is a comprehensive master plan for transportation that consider this facet of multi-modal environment in transportation services, and that is why the Ministry of Transport in collaboration with the Japanese Government had prepared a Master Plan for Transportation in Greater Cairo region in 2002, whereby transportation authorities in the city had started to take seriously some of the proposed programs and projects of this master plan to be implemented as urgently as it could possibly be in order to improve the status quo.

Thus **priorities for action** towards improvement of the current transportation system in Cairo could be summarized in the following areas of coverage:

1. Increase the efficiency of public transport, by developing means of mass transit, such as tram, underground Metro or the Subway, and work to expand the use of such modes to achieve integration between all different means of transport on the city scale, as well as utilization of the River Nile as a major, essential hub for passengers and goods movement.
2. Increase the efficiency of operation (in terms of fuel consumption) of vehicles and communal transport means that are currently in service,

by doing the proper necessary sort of maintenance, and substitute those aged vehicles that are neither energy efficient nor environmentally sound.

3. Replace the current fueling techniques of most transport means by a more effective, environmentally sound system (replace the ordinary system currently dependant on diesel by natural gas-dependant system).
4. Rehabilitation of roads and infrastructures associated with transport system.
5. Expand the implementation of multi-story garages.
6. Expansion in establishment of vehicles technical inspection service stations and the use of modern, latest, up-to-date devices for measuring pollution levels to curb environmental pollution and maintaining the economic returns for both vehicles' owner and society at large.

In conclusion, the framework of actions should relies on a number of pillars such as; replacement of the traditional fuel types by other less polluting fuel, raising environmental awareness among road users (with preparation of periodic bulletins to warn the dangers resulting from air pollution from vehicle exhausts).

#### **- Proposed action plan for improving the current transportation System in Cairo (Opportunities for SCP initiatives)**

The Governorate of Cairo had established some sort of urgent action plan that had included a number of priority programs and/or projects. The framework of this plan could be illustrated hereafter:-

- ***Switching to Natural Gas:*** Cairo municipal bus companies are switching their fleets to be Compressed Natural Gas – powered busses. The Transfer of cars, vehicles fuel to natural gas, which is a more environmentally friendly type of fuel than the conventional gasoline has already been started and will continue in future, by introducing such incentive of smart card system, whereby a driver can convert his car for free to use natural gas.
- ***Underground mass transit system:*** To encourage public transport the third underground Metro line to connect Cairo airport with Ataba Square is under construction. The underground-electrified mass transit system is expected to decrease the travel times, pollution and encourage users of surface modes to shift to this fast facility. This also includes encouraging above ground electrical means of transit, such as the renovation of the traditional, conventional Heliopolis Metro line.

The governorate of Cairo is also planning to build twelve “12” underground multi-story parking structures, costing about three “3” billion Egyptian pounds that will be provided by the private sector using the Build-Operate and Transfer (BOT) system. A garage has already been built under Heliopolis sporting club and the construction work has started on other garages in Tahrir/Omar Makram, Roxy and Ahmed Helmi areas.

## **6. Suggested Projects**

### **6.1 Cross cutting projects**

- Awareness raising on Sustainable Consumption and Production
- Products Eco-Labeling
- Introducing SCP Concepts in the educational system

### **6.2 Solid Waste**

- Source Segregation and minimization in School / District
- Introduce the usage of recycled paper bags, bio-degradable plastic bags or putting low price on plastic bags at hyper markets
- Implementing Methane capture unit in one of the operating dump sites
- Construction Demolition waste disposal through policy change
- Implementing landfill model
- Encouraging recycling policies

### **6.3 Industrial Development**

- Introducing Cleaner Production mechanisms for SMEs (Smelters, Potteries, Coal Manufacturing facilities)
- Promoting Technology Transfer policies in SMEs
- Industrial Waste Management in Manshiet El-Sad area

### **6.4 Urban Development (Slums)**

- Vocational Training (Recycled plastics)
- Promote energy efficiency lamps
- Increase efficiency of Solid Waste management
- Health Clinics waste management
- Upgrading of a selected school in slum area
- Women Empowering through awareness and educational classes

### **6.5 Transportation and Air Emissions**

- Tires recycling to be used in rail construction in Mahkama Sq.
- Installing traffic lights system in certain bottle neck sq.
- Awareness campaign on driving behavior change
- Bus Priority lanes in Port Said st.

## **7. Selected Three Priority Projects**

After presenting all the suggested projects in the four sectors to the SCP steering committee, and from the analysis of the current situation and the priorities for action for each sector, the following three projects have been selected by the committee as a priority projects to be implemented as follows:



**- Selected priority projects for promotion of sustainable consumption and production**

<b>SCP thematic area</b>	<b>project</b>	<b>Objectives</b>	<b>Activities</b>	<b>Outcomes</b>	<b>Suggested Implementing entities</b>	<b>Verifiable Indicators</b>
<b>Solid Waste</b>	Source Segregation in a selected district	<ul style="list-style-type: none"> <li>- Encouraging sorting and separation at source.</li> <li>- Expansion in recycling activities.</li> <li>- Decrease the unit price of the produced recycled products.</li> </ul>	<ul style="list-style-type: none"> <li>- Selection of eligible area for implementing the project.</li> <li>- Awareness on source segregation benefits.</li> <li>- Informing waste collection company of segregated waste collection methods.</li> <li>- Creating incentives for segregation.</li> <li>- Preparing solid waste segregation and collection strategy in Cairo to help in replicating the project in other districts.</li> </ul>	<ul style="list-style-type: none"> <li>- Segregated waste in the selected district.</li> <li>- Increase efficiency of recycling</li> <li>- Lowering the cost of segregation process.</li> </ul>	<ul style="list-style-type: none"> <li>- EEAA</li> <li>- Media</li> <li>- NGOs</li> <li>- ENCPC</li> <li>- Cairo Governorate.</li> </ul>	<ul style="list-style-type: none"> <li>- Rates of segregated wastes.</li> <li>- Numbers of people aware of the segregation methods and benefits.</li> <li>- Decrease amounts of accumulated waste.</li> </ul>

SCP thematic area	project	Objectives	Activities	Outcomes	Suggested Implementing entities	Verifiable Indicators
<b>Industry</b>	Integrated industrial Waste Management in (Manshiet El-sad) area.	<ul style="list-style-type: none"> <li>- Decrease pollution level.</li> <li>- Properly manage industrial Hazardous Waste.</li> <li>- Promote healthy environment in the vicinity of this area.</li> </ul>	<ul style="list-style-type: none"> <li>- Identifying quantities and types of generated wastes.</li> <li>- Identify Hazardous Waste types/ streams.</li> <li>- Preparing action plan for the efficient management of industrial waste.</li> <li>- Defining roles and responsibilities for implementing this action plan.</li> <li>- Monitoring system for the implementation of the plan.</li> <li>- Suggest waste reduction mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>- Improved industrial performance in urban settles.</li> <li>- Improved living environment for people.</li> <li>- Data-base for the industrial facilities in the area for future environmental monitoring.</li> <li>- Action plan that could be replicated in other areas.</li> </ul>	<ul style="list-style-type: none"> <li>- EEAA</li> <li>- ENCPC</li> <li>- Cairo Governorate.</li> <li>- MOTI.</li> </ul>	<ul style="list-style-type: none"> <li>- Amount of wastes generated.</li> <li>- Amount of Hazardous Waste properly managed.</li> <li>- Number of facilities aware of and implementing action plan.</li> <li>- Number of public complaints.</li> </ul>

SCP thematic area	project	Objectives	Activities	Outcomes	Suggested Implementing entities	Verifiable Indicators
<b>Transportation</b>	Bus Priority lane in Port Said st.	<ul style="list-style-type: none"> <li>- Improving the traffic flow in the congested areas.</li> <li>- Encourage the use of public transportation.</li> <li>- Contribute to air quality improvement.</li> </ul>	<ul style="list-style-type: none"> <li>- Deliver awareness campaigns on the benefits of bus priority lane.</li> <li>- Analyze baseline data to identify the most suitable area to construct the pilot priority lane.</li> <li>- Rehabilitation of bus stop along priority lane.</li> </ul>	<ul style="list-style-type: none"> <li>- Facilitate the traffic flow in Port Said st.</li> <li>- Improvement of passenger safety on getting on and off the bus.</li> </ul>	<ul style="list-style-type: none"> <li>- Cairo Governorate.</li> <li>- MOT.</li> </ul>	<ul style="list-style-type: none"> <li>- Improvement in Traffic flow.</li> <li>- Passenger satisfaction.</li> <li>- Number of passengers using buses served by bus priority lanes.</li> </ul>

## **8. Conclusions and recommendations**

Egypt has achieved great progress in many of the development areas towards reaching sustainable development on both the national and local levels. This report has pointed out these achievements on the four thematic areas which have been selected for the SCP Cairo initiative. Several policies, strategies and action plans are currently being implemented for resources conservation and coping with the environmental protection policies and activities.

Moreover, it is important to say that there is a need for further and detailed actions to be implemented to study the rest uncovered development areas than the four SCP selected priority areas covered by this report; regarding the introduction of sustainable consumption and production patterns. This report can be considered as the first step towards achieving sustainability on both consumption and production issues. Capacity building and training activities should also be implemented in many areas to assist in the progress as well as the sustainability of the process. Finally, working on building a comprehensive data base including all the issues related to the consumption and production patterns is so important for measuring the progress done on such areas.

On the other hand, a table to conclude the thematic area; challenges, measures taken/planed, SCP priority actions and the suggested pilot projects can be illustrated as follows:

Thematic Area	Challenges	Measures taken/ Planned	SCP Priority Actions	Suggested Pilot projects
<b>Solid Waste Management</b>	<ol style="list-style-type: none"> <li>1. Inefficiency of the current system.</li> <li>2. Absence of initiatives addressing waste minimization and segregation at source</li> <li>3. Poor integration and coordination among various concerned parties.</li> <li>4. Weak law enforcement</li> <li>5. Inadequacy of proper funding</li> <li>6. Inadequacy of qualified and trained personnel to manage and operate the system.</li> <li>7. Inadequacy of complementary infrastructure.</li> <li>8. Weak environmental public awareness.</li> </ol>	<ol style="list-style-type: none"> <li>1- The Sanitary landfills for Northern and Western zones.</li> <li>2- The treatment units for hazardous medical wastes.</li> <li>3- Control on the quantities of produced gases (especially CO2) from compost</li> <li>4- Recycling factories in the southern zone.</li> <li>5- Industrial hazardous waste treatment unit in the southern area.</li> <li>6- Expansion in recycling activities by establishing of more recycling factories for conversion of waste to compost, and establishing of plastic recycling factories;</li> <li>7- Encouraging sorting and separation at source, to decrease the unit price of the produced recycled products.</li> </ol>	<ol style="list-style-type: none"> <li>1. Introduce new initiatives for source reduction and segregation</li> <li>2. Increase the efficiency of collection and transportation services.</li> <li>3. Establishment of transfer stations</li> <li>4. Rehabilitation of dump sites.</li> <li>5. Capacity building programs</li> <li>6. Awareness raising programs</li> </ol>	<ul style="list-style-type: none"> <li>- Source Segregation and minimization in School / District</li> <li>- Introduce the usage of recycled paper bags, bio-degradable plastic bags or putting low price on plastic bags at hyper markets</li> <li>- Implementing Methane capture unit in one of the operating dump sites</li> <li>- Construction Demolition waste disposal through policy change</li> <li>- Implementing landfill model</li> <li>- Encouraging recycling policies</li> </ul>
<b>Industrial Development</b>	<ol style="list-style-type: none"> <li>1. Difficulty and high costs of relocation of large scale industries.</li> <li>2. Failure of some old industrial facilities to comply with environmental policies and standards.</li> <li>3. Inadequacy of proper land slots for relocation of polluting industries and difficulties in securing necessary approvals</li> <li>4. The random spread of polluting small and medium scale industries within the residential areas.</li> <li>5. Problems facing existing industries to</li> </ol>	<p><b>For SMEs:</b></p> <ol style="list-style-type: none"> <li>1. The Relocation of 569 smelters as a part of the plan for improvement of smelters.</li> <li>2. The improvement of 29 potteries in the Mosalasa area in old Cairo, and the improvement of 150 potteries in Batn El-Ba'ar area in old Cairo.</li> <li>3. There are 50 quarries in Cairo Governorate for which there were an initiative to prepare environmental requirements for operation of quarries.</li> </ol>	<ol style="list-style-type: none"> <li>1. Upgrade existing land use plans to guide the relocation process.</li> <li>2. Continue efforts for identifying polluting industrial activities (small, medium and large establishments)</li> <li>3. Facilitate new innovative approaches for the adoption of cleaner production technologies in SMEs</li> <li>4. Take the necessary steps towards the development of an industrial</li> </ol>	<ul style="list-style-type: none"> <li>- Introducing Cleaner Production mechanisms for SMEs (Smelters, Potteries, Coal Manufacturing facilities)</li> <li>- Promoting Technology Transfer policies in SMEs</li> <li>- Hazardous Waste Management in Manshiet El-sad area</li> </ul>

Thematic Area	Challenges	Measures taken/ Planned	SCP Priority Actions	Suggested Pilot projects
<b>Industrial Development</b>	<p>adopt cleaner production concepts.</p> <p>6. The unavailability of IHW management system in Cairo</p>	<p>4. There are around 250 marble workshops and around 4 crushers in Shak El- So'ban in Tora, provided with about 50% of the infrastructure and services needed are finished and all are operating with electricity and equipped with dust control systems.</p> <p>5. 500 feddans in El-Robeiky (North of Badr City) have been allocated by decree 161 for the year 1995 for the relocation of the Tanneries and glue factories in Old Cairo.</p> <p>6. Cairo Governorate had a plan to relocate polluting industrial facilities. The governorate has allocated 1500 feddans south El-Katamyia- Ein Sokhna Road for the project.</p> <p><b><u>For Large Industries:</u></b></p> <ul style="list-style-type: none"> <li>• The Ministry of Trade and Industry (MTI) has carried out a study for relocating large factories from Greater Cairo Region in March 2006, MTI identified 419 large factories. The study stated the 2 stages of the project as follows: <ul style="list-style-type: none"> <li>- <u>First stage:</u> identifying large factories and classifying them in accordance with the pollution level.</li> <li>- <u>Second stage:</u> propose alternative sites for relocating the highly polluted ones.</li> </ul> </li> </ul>	<p>Hazardous Waste Management System.</p>	

Thematic Area	Challenges	Measures taken/ Planned	SCP Priority Actions	Suggested Pilot projects
<p style="text-align: center;"><b>Transportation And Air Emissions</b></p>	<ol style="list-style-type: none"> <li>1. Inefficiency of public transit system.</li> <li>2. Inadequacy of the road infrastructure to co-op with escalating number of transport modes.</li> <li>3. Inefficiency of integration of different transportation modes.</li> <li>4. Limited access to financing mechanisms.</li> <li>5. Inefficiency of inter-sectoral co-ordination among different concerned parties in transportation sector.</li> <li>6. Lack of adequate level of public awareness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Currently building a one-way extension to connect the section of the 6th of October flyover- that runs parallel to Al-Galaa and Ramses Streets- with the 15th of May flyover, then to the 26th of July bridge, which ends at Sultan Abul-Ela Mosque; the new extensions are considered critical aiming at easing traffic throttling, and directing cars and vehicles (coming to and moving out) away from the city heart.</li> <li>2. Switching to Natural Gas: Cairo municipal bus companies are switching their fleets to be Compressed Natural Gas – powered busses.</li> <li>3. Underground mass transit system: in order to encourage public transport the third underground Metro line to connect Cairo airport with Ataba Square is under construction.</li> <li>4. Building of twelve “12” underground multistory parking structures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase the efficiency of public transport system.</li> <li>2. Encourage people to use public transport and less private cars.</li> <li>3. Promote the use of environmentally sound solutions.</li> <li>4. Develop behavioral change pilot programs.</li> <li>5. Use of advanced technological approaches to solve traffic throttling problems.</li> </ol>	<ul style="list-style-type: none"> <li>- Tires recycling to be used in rail construction in Mahkama Sq.</li> <li>- Installing traffic lights system in certain bottle neck sq.</li> <li>- Awareness campaign on driving behavior change</li> <li>- Bus Priority lanes in Port Said st.</li> </ul>

Thematic Area	Challenges	Measures taken/ Planned	SCP Priority Actions	Suggested Pilot projects
<b>Urban Development and Slums</b>	<ol style="list-style-type: none"> <li>1. Absence of accurate and systematic information on (and even maps of) slum areas and their needs.</li> <li>2. Limited accessibility to services and infrastructure and the appearance of illegally obtained public services.</li> <li>3. Increase in number of deteriorated buildings as a result of confused ownership.</li> <li>4. Dependency on informal economic sector.</li> <li>5. Institutional and financial constraints.</li> <li>6. Inadequate legal framework to eliminate appearance and existence of slums.</li> <li>7. Inadequate implementation of some polices (adding solid waste to the electricity bill).</li> </ol>	<ol style="list-style-type: none"> <li>1. Development program for 68 slums on a total area of 2500 acres, through identifying needed services, upgrading and expansion of narrow streets and alleys.</li> <li>2. Removal and Re-planning for 13 slums having a total area of 170 acres, which urgently need to be completely removed and re-planned according to urban basis, with the temporary resettlement of citizens until the re-planning complete.</li> <li>3. Cairo governorate has established the “Slums Development Unit” in 2007, which is directly affiliated to the governor for coordinating efforts between different slums development stakeholders and building slums data base.</li> </ol>	<ol style="list-style-type: none"> <li>1. Enforce existing policies/mechanisms that prevent the creation of new slums.</li> <li>2. Building an integrated database for slum areas (on-going action) for planning purposes.</li> <li>3. Increase coordination between different parties involved in slums development (on-going action).</li> <li>4. Focusing on community empowerment and encouraging self motivated actions (<b>Local Initiatives Committee</b>).</li> <li>5. Providing and increasing access to infrastructure and services.</li> <li>6. Enable land ownership and property registration.</li> <li>7. Checking legal status of informal sectors</li> </ol>	<ul style="list-style-type: none"> <li>- Vocational Training (Recycled plastics)</li> <li>- Promote energy efficiency lamps</li> <li>- Increase efficiency of Solid Waste management</li> <li>- Health Clinics waste management</li> <li>- Upgrading selected school in slum area</li> <li>- Women Empowering through awareness and educational classes</li> </ul>



Consequently, there is a need for establishing a permanent national SCP committee and a task force committee in order to implement the selected priority projects in the report and for policy making and to carry out activities on the national level introducing SCP approach in other development sectors.

With regards to each of the four thematic areas, a number of recommendations were derived in order to give guidelines for the improvement process in each sector. These are as follows:

### ***Solid Waste management***

- Develop and implement a city-wide programme that particularly promotes the application of the '3 R' principles of reducing, reusing and recycling of domestic waste at or nearby the source with more focus on the reduction of generation of waste and maximizing the waste-to-resource conversion.
- Facilitate the development and enforcement of the necessary regulatory, institutional and economic instruments that would encourage all sectors of the society, namely, individual households, neighborhoods, community groups, businesses and the NGO communities to actively participate and contribute to the effective implementation of the '3R Programme.
- Launch a comprehensive awareness and education programs targeting all sectors of the society with particular attention to the youth in order to have their active participation in the 'three R' programme.

### ***Industrial Development***

- Develop an integrated industrial environmental management programme, for one of the industrial zones as a pilot, which would facilitate the promotion of efficient resource utilization and reduced environmental impacts from the industrial activities.
- Develop and implement a capacity building programme on environmental management system for industrial zones on the basis of existing guidelines and the experience from the activity under the pilot industrial zone.
- Create an enabling policy and institutional context for the development and effective delivery of environmental services within existing industrial zones and develop support programmes to SMEs.
- Ensure that new industrial zones that are planned to be developed would fulfill the requirement for appropriate industrial zoning and the provision of efficient environmental management services to the industries that will be located within the zone.

### ***Transportation and air emission***

- Facilitate the development of a coherent and integrated policy (including pricing); planning and operational framework that facilitates the

development and operationalization of an optimal mix between the various modes of transportation that ultimately leads to sustainable mobility.

- Ensure the strict enforcement of the standards and requirements for vehicular emissions and consider the possibility of introducing differentiated toll fees aimed at reducing traffic congestion and the related pollution levels particularly in congested areas.
- Conduct a coordinated public awareness and education programmes on the benefits and importance of adopting sustainable mobility that results in reduced environmental impacts and enhanced economic and social benefits.

### ***Urban Development***

- Develop a national action plan for dealing with slums, through the integration between the currently on-going programs to ensure the upgrading on a sustainable Basis.
- Encouraging the usage of recycled products in hand crafts in a large scale within slum areas, through free-taxing crafts which contains recycled products.
- Develop public awareness campaigns for marginalized groups (slum dwellers) to introduce ideas dealing with sustainable consumption and production.
- Conducting studies for introducing new un-traditional solutions for providing infrastructure and services, which will be consistent with the nature of slums.

## **9. Way Forward**

Looking to the future, environmental pressures will increase with the growth of economy. Rapid changes in lifestyle, particularly in urban areas, are already noticeable. This can be seen in increasing ownership of private cars and in the increasing quantities of waste generated. At the same time public services, including public transport and waste and recycling systems established under a central planning system and authority, have significantly deteriorated and declined.

There is a need for policies implementation and law enforcement in order to stop the incorrect actions which leads to the increase in the consumption rates and increases the environmental deterioration. On the other hand, there is a need also to adopt policies to give consumers an incentive to move towards more sustainable patterns of consumption. National SCP initiatives should focus on economic growth and social change which improve the quality of life, and not only concentrate on the increasing level of individual consumption, with the related negative environmental impacts.

More over, and as for the requirements for the implementation of SCP selected projects, an institutional body and task force is important for the implementation of these initiatives. A permanent National Committee responsible for the SCP initiative will

enhance its progress and search for funds to implement and spreads its concepts furtherly into other cities and governorates.

Economic and environmental benefits from improved eco-efficiency in industry are substantial; such initiatives have not been undertaken consistently. There are emerging signs that decoupling between industrial output and pollution and industrial ecology including the concepts of zero emissions and eco-industrial parks have taken place in one form or another within industries in Egypt. These initiatives have all been on a very small scale, but currently the policies on energy efficiency issued by the Energy Supreme Council and the higher taxation on certain wastes, have set the foundation for the movement towards sustainable Industrial development.

An ecological footprint provides a useful indicator of the degree to which a country's consumption is sustainable. Resources consumed to meet the country's demand for food, energy and goods are translated into equivalent land area in hectares per capita to provide those resources and to absorb emissions such as CO<sub>2</sub> without permanent change. Egypt should starts in the ecological footprint initiative; where it can then be compared to the total available bio-capacity per person. Countries whose footprint significantly exceeds the global available bio-capacity (1.8 hectares per person in 2003) can be considered to have unsustainable consumption and production patterns.

Consequently, Life Cycle Analysis (LCA) and Life Cycle Costing (LCC) are important methods for helping to determine the overall environmental impacts of goods or products, and their lifetime cost. This is especially important in procurement. A life-cycle based approach should be adopted in environmental policies.

These should all be tools and instruments aiding the sustainability and development process in Egypt as a way of extending the current initiatives.

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### **List of Contributors**

Throughout development and production of this document, an inevitably high esteemed contribution from different parties has been experienced, either from the Egyptian Environmental Affairs Agency, the official representatives of Cairo Governorate, the Egyptian National Cleaner Production Center, and/or the consultant.

The fruitful consultation meetings among different members of the working groups geared by piercing insight and guidance from heads of the steering committee had incredibly facilitated the production of this document as well as enriched it.

The following is a list of the key persons whom contributed in the professional development of the document:

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## **Annex 1**

### **Work Methodology**

The SCP program in hand has been prepared following the general methodology of the African 10 Year Program Process which is shown in the figure below. This was developed by UNEP to assist in the preparation and implementation of National or City SCP programs.

In preparing this program, full cooperation and collaboration have been maintained between the main partners; EEAA and CG; and other relevant stakeholders.

A number of methods were pursued to gather, review and analyze the relevant data, documents and studies used in the preparation of this document. These include:

- Interviews with official representatives
- Interviews with stakeholders
- Internet searches on official websites on the national and local levels
- Review available/adopted strategies, policies, action plans and programs
- Analyses of implemented projects and their challenges and successes
- Cross referencing was also used to ensure the reliability of information, if needed

At the outset, it should be noted that the process of developing the SCP program for Cairo did not try or intend or re-invent the wheel through carrying out baseline studies or thinking outside the national contexts. On the contrary, the approach adopted aimed to build on existing political/strategic frameworks, enhance ongoing efforts and bridge gaps or constraints -if any- faced through implementation of current activities.

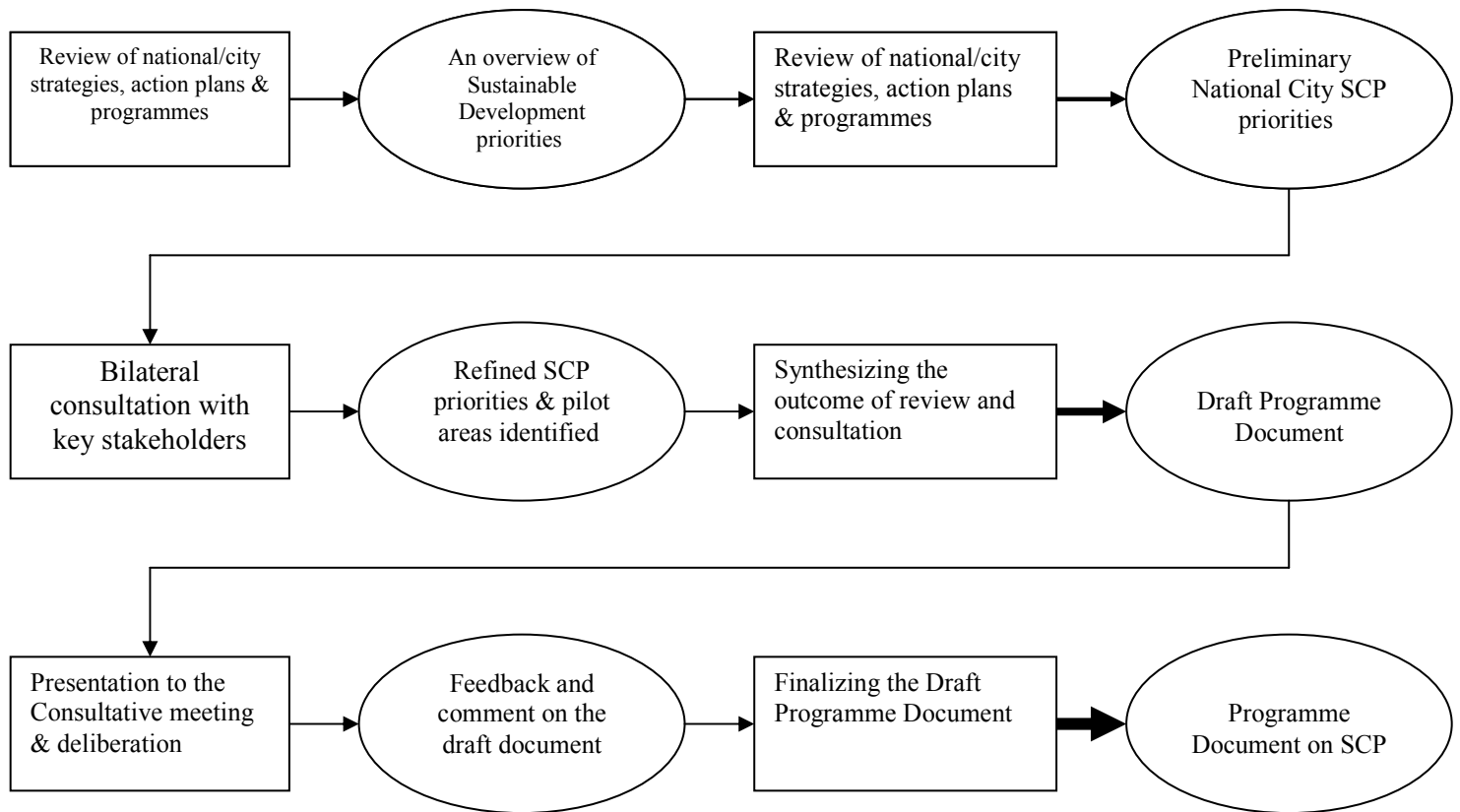
The SCP Program for the city of Cairo started with the identification and review of the main national policy and strategy documents relevant to sustainable development especially when related to the four thematic areas identified for the program. Programs and actions plans along the same allies were also identified, collected and reviewed.

The same process was repeated on the city level, where specific local strategies; programs or projects were identified and reviewed. As the priority thematic areas have been identified by CG and EEAA, emphasis was directed towards those areas. Within each of the identified themes, the review focused on a preliminary identification of high priority needs with relevance to SCP perspectives. All identified priorities were collated to the African 10YFP.

Once the priorities have been preliminarily identified, bilateral meetings with related stakeholders were organized to go through those priorities and arrive at a consensus as to their importance and relation to national and local contexts. Then the identified priorities under the thematic areas were refined based on the results of the bilateral consultations.

During the consultation process, a group of pilot projects under each thematic area was suggested and agreed upon. These pilot projects reflect the actual needs of Cairo City within the SCP context.

Based on this process, a draft SCP program for Cairo was developed. The draft program document was then discussed with a larger group of stakeholders in a local workshop. All comments, ideas, and suggestions made the workshop attendees were incorporated into the final SCP program document for Cairo Governorate.



**SCP Process flowchart**



## Annex 2A

### Overview of Key Figures of CP related Projects

Project	Duration	Budget USD <sup>2</sup>	Main Sectors	# of Assessments	# of Implementations
<b>Projects with technical and financial assistance</b>					
SEAM-UK	1994-2005	19 Million <sup>3</sup>	Textile, food, foundry, furniture	130	50
ACI-DANIDA	2002-2008	13 Million	Textile, food, foundry, engineering	Currently: 120 Planned: 200	Currently: 50 Planned: 100
EPAP-FINIDA	1997-2004	7 Million <sup>4</sup>	all	See EPAP-WB	
EPAP-WB	1997-2005	7 Million <sup>5</sup>	All	~ 25 <sup>6</sup>	25
EEIF	1997-2004	16 million <sup>7</sup>	Mainly textile, food, chemical, building and metal industry	40	10
EP3 (USAID)	1994-1999	Part of a 170 Million project	Textile, food, chemical, metal finishing	70	30
<b>Pure finance projects</b>					
DCA (USA)	Since 2003	Guarantee for loans; 10 Million	Natural gas conversion	---	---
KfW	Since 1997	52 Million grant, 52 Million credit <sup>8</sup>	All	---	100 <sup>9</sup>

<sup>2</sup> Average exchange rates for project period taken

<sup>3</sup> 10.4 million £; CP only a component, although the most important

<sup>4</sup> CP only a component; 5.3 million €

<sup>5</sup> 20% grant component of 35 Million USD loan

<sup>6</sup> About 2/3<sup>rd</sup> of these are pure end-of-pipe projects like wastewater treatment plants or de-dusting facilities

<sup>7</sup> 20 million C\$; about 80% for enterprise component; 20% of funds not yet utilized.

<sup>8</sup> 44 Million € each

<sup>9</sup> Funds of PSI II not yet fully committed; another 10-15 companies could be included

## Annex 2B

Overview on the Main Components of a National CDM Strategy for Egypt (priority areas highlighted)

I. Involvement of Egypt in CDM	Wait and see	Moderately Pro-Active	Very Pro-Active
II. Domestic Framework	CDM Committee and CDM Unit	Role of governmental bodies	Role of Non-Governmental Bodies
III. Type of Investor	Classical Donor Institutions, Development Aid	Governments	Private Companies and Carbon Funds

IV. Sector / Technologies	Power Production	Industry	Transport	Residential and Commerce	Waste	LULUCF <sup>10</sup>
Energy efficiency	X	X	X	X		
Co-generation	X	X		X		
Fuel switch	X	X	X	X		
Renewable	X	X		X	X	
Rail electrification			X			
Waste digestion					X	
Afforestation activities						X

<sup>10</sup> Land Use, Land-Use Change and Forestry

## Annex 3

### 1. Consulted entities during the preparation of the report

Consulted Entity	Contacted person
Egyptian Environmental Affairs Agency (EEAA)	Dr. Atwa Hussien Eng. Ahmed Abu El-soud Eng. Mona El-agizy Ms. Samah Saleh
Cairo Governorate (CG)	Eng. Khalil Shaat Eng. Gamal Saleh Gen. Nasr Mahmoud Essa
Traffic Planning and Engineering Authority	Eng. Fifi Mohamed Abd el-ghani
Cairo Cleansing and Beautification Authority	Dr. Hussien Ahmed Hussien
General Authority for Industrial Development (GAID)	Dr. Tarek Wafik
General Organization for Physical Planning (GOPP)	Eng Hoda Edward

2. **Internal meetings** between Envirionics team work and with ENCPC during the whole working phases.
3. **Phone calls** were made during the data collection and working phases to collect data and discuss programmes and projects currently implemented or proposed with the following entities:
  - ENCPC
  - Dr. Tarek Wafik, Industrial Development Authority steering committee member.
  - General Organization of Physical Planning (GOPP)
  - Industrial Development Authority (IDA)
  - Cairo Governorate steering committee members.
  - EEAA leaders.
4. **Visits** for data collection to deferent entities such as; General Organization of Physical Planning (GOPP), Industrial Development Authority (IDA), Cairo Traffic Planning and Technical Research General Department, Cairo Cleansing and Beautification Authority, Cairo Governorate and EEAA.
5. **Internet Search** for data collection on the working thematic area in the national, sectoral and local phase, and also in the analysis phase.

6. **Presentation** was done to the steering committee for discussing the 1<sup>st</sup> draft of the report and taking feedbacks from the steering committee and discussing the proposed pilot projects. This meeting was held in 7/5/2008 with the presence of ENCPC representatives.
7. **Workshop** for the discussion of the final draft report. This workshop was held in 18/5/2008 with the presence of deferent stakeholders.